Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volatiles from Groundwater
Future Child Resident Scenario - RME
puttiwest Prperties, Wells G&H Superfund Site, Operable Unit 2
perjona Auto Parts

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Hazard

Incremental

| | | Indoor exposure groundwater conc., carcinogen (µg/L) | Indoor exposure groundwater conc., noncarcinogen (µg/L) | Risk-based indoor exposure groundwater cond., {µg/L} | Pure component water solubility, S (µg/L) | Final indoor exposure groundwater conc., (µg/L) |
|---------|---|---|---|--|---|---|
| | | | | | | N/A |
| | 1,1,1-Trichloroethane | NA NA | NA | NA | 1.33E+06 1.70E+05 | N/A N/A |
| 76131 | Trichloro-1,2,2-triflouroethane, 1,1,2- | NA | NA | NA | | N/A |
| 79005 | 1,1,2-Trichloroethane | NA NA | NA NA | NA | 4.42E+06 5.06E+06 | N/A |
| 75343 | 1,1-Dichloroethane | NA . | NA NA | NA . | 2.25E+06 | N/A |
| 75354 | 1,1-Dichloroethylene | NA NA | NA | NA NA | 3.00E+05 | N/A |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA. | NA. | | N/A |
| 95501 | 1,2-Dichlorobenzene | NA NA | NA | NA NA | 2.77E+07 6.88E+04 | N/A |
| 541731 | Dichlorobenzene, 1,3- | NA | NA | NA | | N/A |
| 106467 | 1,4-Dichlorobenzene | NA NA | NA NA | NA | 7.38E+04 | N/A |
| 78933 | Butanone, 2- (MEK) | NA NA | NA NA | NA NA | 2.23E+08 | N/A |
| 67641 | Acetone | NA NA | NA | NA | 1,00E+09 | |
| 71432 | Benzene | NA NA | NA | NA. | 1,75E+06 | N/A |
| 74839 | Bromomethane | NA NA | NA NA | NA. | 1,52E+07 | N/A |
| 75150 | Carbon Disulfide | NA NA | NA NA | NA. | 2.67E+06 | N/A |
| 108907 | Chlorobenzene | NA | NA NA | NA. | 4.72E+05 | N/A |
| 75003 | Ethyl Chloride | NA NA | NA | NA | 5,32E+06 | N/A |
| 67663 | Chloroform | NA | NA NA | NA NA | 7.92E+06 | N/A |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA NA | 3.50E+06 | N/A |
| | Cyclohexane | NA_ | NA | NA NA | 5.50E+04 | N/A |
| 100414 | Ethylbenzene | NA | NA NA | NA NA | 1.69E+05 | N/A |
| | Isopropylbenzene | NA | NA NA | NA . | 5.60E+04 | N/A |
| | Methyl cyclohexane | NA | NA | NA | 1.40E+04 | N/A |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA. | NA NA | 5.10E+07 | N/A |
| / | Methylene chloride | NA | NA | NA | 1.30E+07 | N/A |
| | Tetrachloroethylene | NA | NA | NA | 2.00E+05 | N/A |
| | Toluene | NA | NA | NA | 5.26E+05 | N/A |
| 156605 | trans-1,2-Dichloroethytene | NA | NA | NA | 6.30E+06 | N/A |
| | Trichlorgethylene | NA NA | NA | NA. | 1.10E+06 | · N/A |
| | Vinyl chloride | NA | NA | NA. | 2.76E+06 | N/A |
| 1330207 | - | NA | NA | NA . | 2_20E+05 | N/A |
| | Acetophenone | NA | NA | NA | 6.13E+06 | N/A |
| | Naphthalene | NA | NA | NA | 3.10E+04 | N/A |
| | Methylnaphthalene, 2- | NA | NA. | NA | 2.46E+04 | N/A |
| | Biphenyl, 1,1'- | NA | NA | NA . | 6.94E+03 | N/A |
| | Acenaphthylene | NA | NA | NA | 3,93E+03 | N/A |
| | Acenaphthene | NA | NA | NA . | 4.24E+03 | N/A |
| | Fluorene | NA | NA | NA | 1,90E+03 | N/A |
| | Phenanthrene | NA | NA . | NA | 1.28E+03 | N/A |
| | Anthracene | NA | NA | NA | 4.34E+01 | N/A |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.00E+04 | N/A |
| C11-C22 | C11-C22 Aromatics | NA | NA | NA | 5.80E+06 | N/A |
| 05-C8 | C5-C8 Aliphatics | NA | NA | NA | 1.10E+07 | N/A |
| C9-C10 | C9-C10 Aromatics | NA | NA NA | NA | 5.10E+07 | N/A |
| C9-C12 | C9-C12 Aliphatics | NA | NA | NA. | 7.00E+04 | N/A |

| incremental | Hazard |
|--------------|---------------|
| risk from | quotient |
| vapor | from vapor |
| intrusion to | intrusion to |
| indoor air. | indoor air, |
| carcinogen | noncarcinogen |
| (unitless) | (unitless) |
| | |
| NA. | NA |
| NA | NA. |
| NA NA | NA |
| NA | NA |
| NA | 6.9E-05 |
| NA | NA |
| NA | NA |
| NA | NA |
| NA | 2.5E-06 |
| NA | NA |
| NA NA | NA NA |
| | 4.3E-05 |
| 8.7E-10 | |
| NA | NA |
| NA NA | NA |
| NA | NA NA |
| NA | NA . |
| NA NA | NA |
| NA . | 3.8E-04 |
| NA | NA NA |
| NA_ | NA |
| NA | NA NA |
| NA | NA |
| NA NA | NA NA |
| NA | NA |
| 7.7E-09 | NA . |
| NA | NA |
| NA . | NA |
| 5.4E-06 | 1.4E-02 |
| 1.6E-08 | 2,1E-04 |
| NA | NA . |
| NA NA | NA NA |
| NA | 6.5E-04 |
| NA | NA |
| NA. | NA NA |
| NA NA | NA . |
| NA | NA |
| NA | NA NA |
| NA. | 3.6E-04 |
| NA | NA NA |
| NA | NA NA |
| NA | NA NA |
| NA NA | NA NA |
| NA NA | NA NA |
| NA NA | NA |
| L | 1., |

| TOTAL: | 95% UCL Cancer Risk 5E-06 | 95% UCL HI 2E-02 | |
|--------|------------------------------------|-----------------------------------|--|
| | |]= Cancer risk > or HQ/HI>1E+0 | |

| Johnson & Ettinger Mod Inhelation of Volaties for Future Child Resident S | om Groundwater Scanario - CT | | | _ | | | | | | | | | | . | | | | | |
|---|--|--------------------------|-----------------------------|--------------------------------|-----------------|-----------------------------|---------------------------------|-----------------------------|---------------|----------------------|-------------------------------|--------------------|--|-----------------------|-----------------------|-----------|------------|-----------|--------------|
| Southwest Proerties, W. Aberiona Auto Parts | alla G&H Superfund Ska, Operable Ur | nd 2 | | | | | | | | | | | | | | | | | |
| CALCULATE RISK-BAS | SED GROUNDWATER CONCENTR | RATION (enser "X" in "YE | £8° box) | | | | | | | | | | | | | | | | |
| | YES | | | | | | | | | | | | | | | | | | |
| CALCULATE INCREME | OR ENTAL RISKS FROM ACTUAL GROW and initial groundwater conc. below) | JUNDWATER CONCEN | ПРАТІОН | | | | | | | | | | | | | | | | |
| | YES X | | ENTER | ENTER | ENTER | ENTER | | | | | | | | | | | | | |
| ENTER | | ENTER | Deoth below grade | LWILK | E-A-CH | | ENTER | ENTER | | | | | | | | | | | |
| Chemical | Enter Initial group | 95% UCL groundwater | to battam | Depth | | Average wolf | Vadore cone SCS | User-definer Vadose zone | | ENTER Vadone zone | ENTER Valore zone | ENTER Target | ENTER Teroet hezerd | ENTER | ENTER | ÉNTER | ENTER | ENTER | ENTER |
| CAS No. | | COUNTY SERVICE | of engineed space floor, | below grade to water table. | SCS soi tops | groundwater temperature. | soli type | soli vapor | exit dry | moli total | scii water filled | riek for | uvolent for | Averaging time for | Averaging time for | Екромуге | Exposure | Ехроните | Coversion |
| (numbers only; | | C., | l _f | LWT | directly above | Y _a | (used to estimate soil vecor | OR permeability | bulk density. | porceity. | porceity. | carcinogens, | Ponce cinosene. | carcinogens, | roncercinopene, | duration. | frequency, | time | (solor |
| no dashas) | Chemical | (pg/L) | (15 or 200 cm) | (çm) | water labia | (*0) | permesbility) | Note (cm²) | (g/cm²) | (unitions) | 6,, ^V (cm³/cm³) | TR (unittees) | THQ (unitions) | ATc | AT _{NC} | ED | EF | ĘΤ | ÇF |
| 71656 | 1,1,1-Trichiprosthane | | 52.12 | 82.6 | LS | 10 | LS | | | | | | [Drineas] | (YF#) | (yra) | (yra) | (days/yr) | (hra/day) | (hravyr) |
| 76131 Tri 79005 | chloro-1.2.2-triflourgethane, 1.1.2- | | 52,12 | 52.5 | LS | 10 | LS | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 350 | 16 | 8760 |
| 76343 | 1,1,2-Trichloroethene 1,1-Dichloroethene | | 52.12 52.12 | 82.6 | LS | io | L3 | | 1.5 | 0 43 | 0.3 | 1.0E-06 1.0E-06 | 1 1 | 70 | - 3 | 2 | 350 | 16 | 8760 |
| 76354 120621 | 1.1-Dichloroethylene | 1.17E-01 | 52.12 | 82.6 82.6 | LS LS | 1D 10 | LS LS | _ ; | 1.5 | 0.43 | 0.3 | 1.0E-06 | <u> </u> | 70 | 2 | 2 2 | 350 350 | 16 | 8750 8750 |
| 95501 | 1.2.4-Trichlorobenzene 1.2-Dichlorobenzene | | 62.12 | 32,6 | LS | 10 | Ş | | 1,5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | + | 70 | 2 | 2 | 350 | 16 | 8760 |
| 541731 | Dichlorobenzene, 1,3- | | 62.12 52.12 | 82.6 82.6 | LS LS | 10 | LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | 2 | 2 | 350 350 | 16 | 8760 8760 |
| 106467 | 1.4-Dichlorobenzene | 4.30E-01 | 52.12 | 82.6 | LS | 10 | L\$ LS | | 1.5 | 0.43 | 0.3 | 1.06-08 | 1 | 70 | 2 | 2 | 350 | 16 | 8760 |
| 67641 | Butarione, 2- (MEK) Acetone | | 52.12 52.12 | 82.6 | LS | 10 | LS. | -i | 15 | 0.43 | 0.3 | 1.0E-06 | | 70 | - 2 | 2 | 350 | 16 | 8760 |
| 71432 74639 | Benzene | 7.50E-02 | 52.12 | 82 6 82 6 | LS LS | 10 | LS LS | -1 | 1.6 | 0.43 | 0.3 | 1 DE-05 | <u> </u> | 70 | 2 | 2 | 350 | 16 | 8760 8760 |
| 75150 | Bromomediane Carbon Disoffice | | 52.12 | 82.6 | LS | 10 | LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | - I | 70 | - 3 | 2 | 350 | 16 | 8760 |
| 108907 | Chiorobenzene | · | 52 12 52 12 | 62.0 62.0 | LS | 10 | ĻŞ | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | 2 | - 2 | 350 | 16 | 8760 |
| 75003 67663 | Ethyl Chloride | | 52.12 | \$2.6 | LS LS | 10 | LS LS | - | 1.5 | 0.43 | 0.3 | 1.0E-06 | i i | 70 | 5 | 2 | 350 | 16 | 8760 8760 |
| 156592 | Chloroform cls-1_2-Dichloroshylene | 8.00E+00 | 52.12 52.12 | 82.6 | 15 | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | - 2 | 2 | 350 | 16 | 8750 |
| 110827 | Cycloherane | | 52.12 | 52.6 62.6 | LS LS | 10 | LS LS | | 15 | 0.43 | 0.3 | 1,05-06 | | 70 | | -2 | 350 | 16 | 8750 8760 |
| 98828 | Edvidentarie sopropularizarie | | 62,12 62,12 | 82.8 | Լ5 | 10 | LS | -1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 350 | 18 | 8760 |
| 108972 | Methyl cyclohecene | | 52.12 52.12 | 82.6 | 1.5 | 10 | LS | | 15 | 0.43 | 03 | 1.0E-06 1.0E-06 | 1 | 70 | - 3 | 2 | 360 | 16 | 8760 |
| 1634044 75092 | Methyl-Tertiary-Butyl Ether | | 52.12 | 82.5 82.6 | 13 | 10 | LS LS | | 5 | 0.43 0.43 | 0.3 | 1,0E-06 | 1 | 70 | <u>÷</u> | | 360 350 | 16 | 8760 8760 |
| 127184 | Methylene chloride Tearachiorgethylene | 4.18E-01 | 52 12 | 82.5 | , LS | 10 | LS | -i | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 - | 70 | 2 | 2 | 350 | 16 | 8760 |
| 108883 | Toluene | V. FOESVI | 52.12 52.12 | 82.6 82.5 | LS LS | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1 0E-00 | 1 1 | 70 | 2 | 2 | 350 350 | 16 | 6760 6760 |
| 156606 79016 | trans-1,2-Dichloroethyleno | | 52.12 | 82.6 | LS | 10 | LS LS | | 1.5 | 0.43 | 0.3 | 1 DE-08 | 1 | 70 | 2 | 2 | 350 | 16 | 6760 |
| 75014 | Triction cathylene Virni chlorida | 2 15E+01 1.97E-01 | 52,12 52,12 | 52.6 | LS | 10 | Ļ5 | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | ! | 70 | | 2 | 350 | 16 | 8760 |
| 1330207 98662 | Хубурра | | 52.12 | 82.6 82.6 | LS LS | 1D 1D | LS LS | 1 | 1.5 | 0 43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 - 1 | 350 | 16 | 8760 8760 |
| 91203 | Acetophenone Naphthylene | 1,35€+00 | 52.12 | 82.6 | LS | 10 | Ls | - | 1.5 | 0.43 0.43 | 0.3 | 1,05-06 | 1 | 70 | 2 | 2 | 350 | 16 | 8760 |
| 91578 | Methylnaphthelene, 2- | 1,355400 | 62.12 52.12 | 82.6 82.6 | - \ <u>\</u> \$ | 10 | L\$ | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 1 | 70 | 2 | | 350 | 16 | 8760 |
| 92524 208868 | Biphanyi 1.1% | | 52,12 | 62 6 | LS LS | 10 | LS LS | | 1.5 | 0,43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 350 360 | 16 | 8750 8760 |
| 83329 | Acenephthylene Acenephthene | | 52.12 | 82.8 | (3 | 10 | LS | | 15 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | ! | 70 70 | ? | 2 | 350 | 16 | 8760 |
| 86737 85018 | Fluorene | | 52.12 52.12 | 82.6 82.6 | L9 LS | 10 | LS LS | | 1.5 | 0.43 | 0.3 | 1.06-06 | 1 1-1 | 70 | 2 | 2 | 350 350 | 18 | 8760 8760 |
| 120127 | Phonesthops Anthrecens | 2.10E+00 | 52 12 | 82.6 | ĻŞ | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1,0E-06 | 7 | 70 | ž | 2 | 380 | 16 | 8750 |
| CP-C18 | C9-C18 Aliphatics | | 52 12 52 17 | 62.6 82.6 | LS | 10 | LS. | <u> </u> | 1.5 | 0.43 | 0.3 | 1,0E-05 1,0E-05 | 1 1 | 70 | z | 2 | 350 | 16 | B760 |
| C11-C22 C5-C8 | C11-C22 Aromatics | | 62.12 | 82.6 | LS L5 | 10 | L8 LS | - 1 | 1.5 | 0.43 | 0.3 | 1,0E-05 | 1 | 70 | 2 | 2 - | 350 350 | 16 | 8760 8760 |
| C9-C10 | CS-C8 Aliphatica CS-C10 Aromatica | | 52.12 | 52.6 | <u>, s</u> | 10 | <u>is</u> | | 1,5 | 0.43 | 0.3 | 1.0E-09 | 1 | 70 | 2 | 2 | 350 | 16 | 8760 |
| C9-C12 | C9-C12 Allohados | | 52,12 52,12 | 82.6 82.6 | - 18 | 10 | LS . | 1 | 1.6 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | | 350 | 16 | 8760 |
| Note: | | | 76.16 | 9 <u>4.</u> 9 | | to [| <u>L5</u> | 1 | 1.6 | 0.43 | 5.3 | 1.0E-06 | 1 | 70 | | | 350 | 16 | 8760 8760 |

negar

1) Default soil parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Buildung (U.S. EPA Juna 19, 2003) were used for and water filled porcetly (0_m), and organic carbon fraction (f_m), and local porcetly (n), and end by built density (n).

Appendix C.4
Johnson & Ettinger Model - Chemical Properties Screen
Inhalation of Volatiles from Groundwater
Future Child Resident Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

| | | | | Henry's law constant | Henry's law constant | Enthalpy of vaporization at | Normal | | Organic carbon | Pure component | Unit | |
|----------|-------------------------------------|----------------------|----------------------|----------------------|----------------------|-----------------------------|----------------|----------------|----------------------|----------------|------------------------------------|------------------|
| | | Diffusivity | Diffusivity | at reference | reference | the normal | boiling | Critical | partition | water | лisk | Reference |
| | | in air. | in water. | temperature. | temperature. | boiling point, | point, | temperature. | coefficient. | salubility. | factor. | сопс., |
| Chemical | | D _a | D _w | Н | T _R | ΔH _{v.b} | T _B | T _C | Koc | S | URF | RfC |
| CAS No. | Chemical | (cm ² /s) | (cm ² /s) | (atm-m³/mol) | (°C) | | (°K) | (°K) | (cm ³ /g) | | (μg/m ³) ⁻¹ | |
| CM3 140. | Chemical | (CIII 75) | (CHI 75) | (autriii /iiioi) | (0) | (cal/mol) | (\) | (N) | (cm/g) | (mg/L) | (μg/m) | (mg/m³) |
| 7455 | A A A Trablement | 7,05,00 | 0.005.00 | 4 707 00 | | | | | | | | |
| | 3 1,1,1-Trichloroethane | 7.80E-02 | 8.80E-06 | 1.72E-02 | 25 | 7,136 | 347.24 | 545.00 | 1.10E+02 | 1.33E+03 | N/A | 2.2E+00 |
| | Trichloro-1,2,2-triflouroethane, 1, | 2.88E-02 | 8.07E-06 | 5.17E-01 | 25 | 1,326 | 320.70 | 481.05 | 2.25E+02 | 1.70E+02 | N/A | 3.0E+01 |
| | 5 1,1,2-Trichloroethane | 7.80E-02 | 8.80E-06 | 9.12E-04 | 25 | 8,322 | 386.15 | 602.00 | 5.01E+01 | 4.42E+03 | 1.6E-05 | 2.2E+00 |
| | 3 1,1-Dichloroethane | 7.42E-02 | 1.05E-05 | 5.61E-03 | 25 | 6,895 | 330.55 | 523.00 | 3.16E+01 | 5.06E+03 | N/A | 5.0E-01 |
| | 1,1-Dichlaroethylene | 9.00E-02 | 1.04E-05 | 2.61E-02 | 25 | 6,247 | 304.75 | 576.05 | 5.89E+01 | 2.25E+03 | N/A | 2.0E-01 |
| | 1,2,4-1 nchlorobenzene | 3.00E-02 | 8.23E-06 | 1.42E-03 | 25 | 10,471 | 486.15 | 725.00 | 1.78E+03 | 3.00E+02 | N/A | 2.0E-01 |
| | | 6.88E-02 | 9.41E-06 | 1.62E-06 | 25 | 1,223 | 465.00 | 697.50 | 5.34E+01 | 2.77E+04 | N/A | N/A |
| | Dichlorobenzene, 1,3- | 4.14E-02 | 8.85E-06 | 4.70E-03 | 25 | 1,242 | 446.00 | 683.96 | · 1.70E+02 | 6.88E+01 | N/A | N/A |
| | 1,4-Dichlorobenzene | 6.90E-02 | 7.90E-06 | 2.43E-03 | 25 | 9,271 | 447.21 | 684.75 | 6.17E+02 | 7.38E+01 | N/A | 8.0E-01 |
| | B Butanone, 2- (MEK) | 8.08E-02 | 9.80E-06 | 5.60E-05 | 25 | 1,311 | 352.50 | 528.75 | 3.83E+00 | 2.23E+05 | N/A | N/A |
| | Acetone Benzene | 1.24E-01 | 1.14E-05 | 3.88E-05 | 25 | 6,955 | 329.20 | 508,10 | 5.75E-01 | 1.00E+06 | N/A | N/A |
| | : benzene) Bromomethane | 8.80E-02 | 9.80E-06 | 5.56 E- 03 | 25 | 7,342 | 353.24 | 562.16 | 5.89E+01 | 1.75E+03 | 7.8E-06 | 3.0E-02 |
| | | 7.28E-02 | 1.21E-05 | 6.22E-03 | 25 | 1,362 | 276.50 | 414.75 | 1.43E+01 | 1.52E+04 | N/A | 5.0E-03 |
| | Carbon Disulfide | 1.04E-01 | 1.29E-05 | 1.27E-02 | 25 | 6,391 | 319.00 | 552.00 | 5.14E+01 | 2.67E+03 | N/A_ | 7.0E-01 |
| | Chlorobenzene | 7.30E-02 | 8.70E-06 | 3.71E-03 | 25 | 8,410 | 404.87 | 632.40 | 2.19E+02 | 4.72E+02 | N/A | 6.0E-02 |
| | Ethyl Chloride | 1.26E-01 | 6.50E-06 | 8.67E-03 | 25 | 1,355 | 249.00 | 373.50 | 1.43E+01 | 5.32E+03 | N/A | 1.0E+01 |
| | Chloroform | 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 6,988 | 334.32 | 536.40 | 3.98E+01 | 7.92E+03 | 2.3E-05 | 5.0 E- 02 |
| 1 | cis-1,2-Dichloroethylene | 7.36E-02 | 1.13E-05 | 4.07E-03 | 25 | 7,192 | 333,65 | 544.00 | 3.55E+01 | 3.50E+03 | N/A | 2.0E-01 |
| | Cyclohexane | 8.00E-02 | 9.00E-06 | 2.00E+00 | 25 | 1,309 | 353,85 | 530.78 | 1.60E+02 | 5.50E+01 | #N/A | #N/A |
| 4 | Ethylbenzene | 7.50E-02 | 7.80E-06 | 7.88 E- 03 | 25 | 8,501 | 409.34 | 617.20 | 3.63E+02 | 1,69E+02 | N/A | 1.0E+00 |
| | Isopropylbenzene | 6.50E-02 | 7.83E-06 | 1.47E-02 | 25 | 1,259 | 425.40 | 631.01 | 9.31E+03 | 5,60E+01 | N/A | 4.0E-01 |
| | Methyl cyclohexane | 9.86E-02 | 8.52E-06 | 4.23E-01 | 25 | 1,296 | 373.90 | 560.85 | 2.68E+02 | 1.40E+01 | N/A | 3.0E+00 |
| | Methyl-Tertiary-Butyl Ether | 1.02E-01 | 1.05E-05 | 5.87E-04 | 25 | 1,324 | 328.36 | 497.11 | 3.84E+01 | 5.10E+04 | N/A | 3.0E+00 |
| | Methylene chloride | 1.01E-01 | 1.17E-05 | 2.19E-03 | 25 | 6,706 | 313.00 | 510.00 | 1.17E+01 | 1.30E+04 | 4.7E-07 | 3.0E+00 |
| | Tetrachloroethylene | 7.20E-02 | 8.20E-06 | 1.84E-02 | 25 | 8,288 | 394.40 | 620.20 | 1.55E+02 | 2.00E+02 | 5,9E-06 | N/A |
| | Toluene | 8.70E-02 | 8.60E-06 | 6.63E-03 | 25 | 7,930 | 383.78 | 591,79 | 1.82E+02 | 5.26E+02 | N/A | 4.0E-01 |
| 2 | trans-1,2-Dichloroethylene | 7.07E-02 | 1.19E-05 | 9.39E-03 | 25 | 1,333 | 320.85 | 516,50 | 5.25E+01 | 6.30E+03 | N/A | 2.0E-01 |
| | Trichloroethylene | 7.90E-02 | 9.10E-06 | 1.03E-02 | 25 | 7,505 | 360.36 | 544.20 | 1.66E+02 | 1.10E+03 | N/A | 4.0E-02 |
| | Vinyl chloride | 1.06E-01 | 1.23E-05 | 2.71E-02 | 25 | 5,250 | 259.25 | 432.00 | 1.86E+01 | 2.76E+03 | 8.8E-06 | 1.0E-01 |
| 3 | Xylenes | 7.69E-02 | 8.44E-06 | 6.73E-06 | 25 | 1,264 | 417.40 | 616.21 | 2.41E+02 | 2.20E+02 | N/A | 1.0E-01 |
| | 2 Acetophenone | _6.00E-02 | 8.73E-06 | 1,02E-05 | 25 | 1,214 | 475.00 | 712.50 | 4,62E+01 | 6.13E+03 | N/A | N/A |
| | Naphthalene | 5.90E-02 | 7.50E-06 | 4.83E-04 | 25 | 10,373 | 491.14 | 748.40 | 2.00E+03 | 3.10E+01 | N/A | 3.0E-03 |
| • | Methylnaphthalene, 2- | 4.84E-02 | 7,75E-06 | 1.01E-03 | 25 | 1,169 | 514.05 | 761.01 | 8.51E+03 | 2.46E+01 | N/A | 3.0E-03 |
| 1 | Biphenyl, 1,1*- | 4.04E-02 | 8.15E-06 | 3.03E-04 | 25 | 1,149 | 529.10 | 793.65 | 6.25E+03 | 6.94E+00 | N/A | N/A |
| | Acenaphthylene | 4.43E-02 | 7.44E-06 | 2.80E-04 | 25 | 1,118 | 553.00 | 792,01 | 4,79E+03 | 3.93E+00 | N/A | 3.0E-03 |
| | Acenaphthene | 4.21E-02 | 7.69E-06 | 1.55E-04 | 25 | 12,155 | 550.54 | 803.15 | 7.08E+03 | 4.24E+00 | N/A | 3.0E-03 |
| | 7 Fluorene | 3.63E-02 | 7.88E-06 | 9.41E-08 | 25 | 12,666 | 570.44 | 870.00 | 7.71E+03 | 1.90E+00 | N/A | 3.0E-03 |
| | Phenanthrene | 3.30E-02 | 7.47E-06 | 1.30E-04 | 25 | 1,057 | 613.00 | 869.01 | 1.41E+04 | 1.28E+00 | N/A | 3.0E-03 |
| | Anthracene | 3.24E-02 | 7.74E-06 | 6.51E-05 | 25 | 13,121 | 615.18 | 873.00 | 2.95E+04 | 4.34E-02 | N/A | 3.0E-03 |
| C9-C18 | C9-C18 Aliphatics | 6.00E-02 | 1.00E-05 | 1.66E+00 | 25 | NA NA | NA | NA | 6.80E+05 | 1.00E+01 | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 6.00E-02 | 1.00E-05 | 7.32E-04 | 25 | NA | NA | NA NA | 5.00E+03 | 5.80E+03 | N/A | 5.0E-02 |
| C5-C8 | C5-C8 Aliphatics | 6.00E-02 | 1.00E-05 | 1.30E+00 | 25 | NA | NA | NA | 2.27E+03 | 1.10E+04 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 6.00E-02 | 1.00E-05 | 7.92E-03 | 25 | NA | NA | NA | 1.78E+03 | 5.10E+04 | N/A | 5.0E-02 |
| C9-C12 | C9-C12 Aliphatics | 6.00E-02 | 1.00E-05 | 1.56E+00 | 25 | NA | NA | NA | 1.50E+05 | 7.00E+01 | N/A | 2.0E-01 |

Appendix C 4
Johnson & Ethinger Model - Celculations Screen
Inholation of Volatiles from Groundwater
Fullure Chief Resident Scenario - CT
Southwest Practice, Wests GAH Superfund Site. Operable Unit 2
Abertona Auto Parte

| | Source- building separation L, | Vacione zone act air-filled porosity, 6, ^Y | Vadose zone effective total fluid enturation, 8 _m | Vadose zone sail intrinsia permeability, k _i | Vacione zone soil relative air permeability, k _{ie} | Vadose zone soil effective vapor parmeability, k _e | Thickness of capitary 2014, L _{ug} | Total perceity in capillary zone. | Air-filled porosity in capillary zone, | Weter-filted percetty in contlary zens. 0 _{mm} | Fixor- well seam parimeter, Xerack | Bidg. ventilation rete, C _{leans} | Area of enclosed space below grade. | Creck- to-tolei area rabo, | Crack death below grade, 2 | Entheley of vectorization at eve. groundwater temperature, ΔH _{c/m} | Henry's law constant at ave, groundwater temperature, H ₂₈ | Henry's law constant at we, groundwall temperature, H'rg |
|---|---|---|--|---|--|---|--|--|--|---|--|---|-------------------------------------|-------------------------------------|--|--|---|--|
| | (cm) | (cm²/cm²) | (cm /cm) | (om²) | (cm²) | (cm²) | (cm) | (cm /cm) | (om³/cm³) | (cm³/cm³) | (cm) | (cm (e) | (cm²) | (unitiess) | (cm) | (cal/mon | (alm-m³/mgl) | (unitiess) |
| | | | | | | | | | | | ,, | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | 1,000 | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | (4000) | 100 NORTH |
| 71556 1,1,1-Trichkroethene | 30.48 | 0.130 | 0.659 | 1.62E-05 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 4 00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 7.885 | 8.50E-03 | 1 3.66E-01 |
| 76131 Trichloro-1,2,2-triflourcethene, 1,1,2- | 30.48 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.76 | 0.43 | 0.127 | 0.303 | 4 00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 1,436 | 4.55E-01 | 1.96E+01 |
| 79005 1,1,2-Trichiorcethane | 30 48 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 9.572 | 3.88F-04 | 1,67E-02 |
| 75343 1,1-Dichloroethane | 30.48 | 0.130 | 0.659 | 1,62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4 DOE+03 | Z.54E+04 | 1.80E+06 | 2 22E-04 | 52,12 | 7,450 | 2 88E-03 | 1.24E-01 |
| 75354 1,1-Dichlorgethylene | 30.48 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4 00E+03 | 2.54E+04 | 1.80E+06 | 2 226-04 | 52.12 | 6.392 | 1 47E-02 | 6.34E-01 |
| 120821 1,2,4-Trichlorobenzene | 30.46 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0 127 | 0,303 | 4.00E+03 | 2.54E+04 | 1.60E+06 | 2 22E-04 | 52.12 | 13.230 | 4.35E-04 | 1.67E-02 |
| 95501 1,2-Dichlorobenzene | 30,46 | 0.130 | 0 659 | 1,62E-06 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0 127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+08 | 2 22E-04 | 52.12 | 1,521 | 1 41E-06 | 8.09E-05 |
| 541731 Dichlorobenzene, 1,3- | 30.48 | 0.130 | 0.659 | 1.62E-05 | 0.390 | 8.33E-09 | 18.75 | 0.43 | 0 127 | 0.303 | 4.00E+03 | | 1.80E+06 | 2 22E-04 | 52.12 | 1,503 | 4 11E-03 | 1,77E-01 |
| 106467 1,4-Dichlorobenzerie | 30.48 | 0.130 | 0 659 | 1.52E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 11,243 | 8 89E-04 | 3.83E-02 |
| 78933 Butanone, 2- (MEK) | 30,48 | 0 130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 16,75 | 0.43 | 0 127 | 0.303 | | 2.54E+04 | 1.60E+06 | 2.22E-04 | 52.12 | 1,486 | 4 90E-05 | 2.11E-03 |
| 67641 Acetone 71432 Benzene | 30,48 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 5.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1,80E+06 | 2.22E-04 | 52,12 | 7,559 | 1 97E-05 | 8.50E-04 |
| 74639 Bromomethane | 30.48 | 0 130 | 0.659 | 1.62E-08 | 0 390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+08 | 2.22E-04 | 52.12 | 8,122 | 2.69E-03 | 1,18E-01 |
| | 30.48 | 0.130 | 0,659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 1,337 | 5.52E-03 | 2.38E-01 |
| 75150 Carbon Disutifide | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.60E+08 | 2.22E-04 | 52.12 | 6,682 | 6 99E-03 | 3.01E-01 |
| 108907 Chlorobenzene | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 9,803 | 1.54E-03 | 6.65E-02 |
| 75003 Ethyl Chloride | 30.48 | 0.130 | 0.659 | 1.62E-06 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 1,201 | 7.79E-03 | 3.35E-01 |
| 67663 Chloroform | 30,48 | 0.130 | 0.659 | 1.82E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52,12 | 7.554 | 1 86E-03 | 8.02E-02 |
| 156592 cts-1,2-Dichloroethylene | 30,48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.B0E+06 | 2.22E-04 | 52.12 | 7,734 | 2.04E-03 | 8 77E-02 |
| 110827 Cyclohexene | 30.48 | 0.130 | 0.659 | 1,62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | | 1.80E+06 | 2.22E-04 | 52.12 | 1,466 | 1.75E+00 | 7.54E+01 |
| 100414 Ethylbenzene | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0,303 | | 2.54E+04 | 1.80E+08 | 2.22E-04 | 52.12 | 10,155 | 3.16E-03 | 1.37E-01 |
| 98628 Isopropylbenzene | 30,48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | | 1.80E+06 | 2.22E-04 | 52.12 | 1,540 | 1.28E-02 | 5.51E-01 |
| 106872 Methyl cyclohexane | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | | 1.80E+06 | 2.22E-04 | 52.12 | 1,505 | 3.70E-01 | |
| 1634044 Riethyl-Tertiery-Butyl Ether | 30.46 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 5.33E-09 | 18,75 | 0.43 | 0.127 | 0,303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2 22E-04 | 52.12 | 1,447 | 5.16E-04 | 1.59E+01 2.22E-02 |
| 75092 Methylene chloride | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+08 | 2.22E-04 | 52.12 | 7.034 | 1.17E-03 | |
| 127184 Tetrachiorostrylana | 30,45 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 9,553 | 7.83E-03 | 5.03E-02 3.37E-01 |
| 108883 Tolume | 30.48 | 0.130 | 0 659 | 1.62E-08 | 0.350 | 6.33E-09 | 18.75 | 0.43 | D.127 | 0.303 | 4.00E+03 | | 1,80E+06 | 7.22E-04 | 52.12 | 9,154 | 7.83E-03 2.92E-03 | |
| 156605 Irans-1,2-Dichlorosthylens | 30.45 | 0.130 | 0.659 | 1.62E-08 | 0.350 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | | 1.80E+05 | 2.22E-04 | 52.12 | 1,417 | | 1.26E-01 |
| 79016 Trichiomalhylene | 30,48 | 0.130 | 0.659 | 1.82E-08 | 0.390 | £.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.50E+06 | 2.22E-04 | 5Z 12 | 8,557 | 8.27E-03 | 3 56E-01 |
| 75014 Vinyl chloride | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 5,000 | 4 79E-03 1,73E-02 | 2 06E-01 |
| 1330207 Xylenes | 30,48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.336-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | | | 7.46E-01 |
| 98862 Acetophenore | 30,48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6 33E-08 | 15.75 | 0.43 | 0.127 | 0.303 | 4,00E+03 | 2.54E+04 | 1.80E+08 | 2.22E-84 | | 1,542 | 5,86E-08 | 2.52E-04 |
| 91203 Nephthalane | 30.48 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 8.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | | 1.80E+05 | 2.22E-04 | 52,12 | 1,518 | 6.91E-06 | 3.83E-04 |
| 91576 Methylnaphthalana, 2- | 30 48 | 0.130 | 0,659 | 1.62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+05 | 2.22E-04 | 52,12 | 12,913 | 1.52E-04 | 6.55E-03 |
| 92524 Biphanyl, 1,5'- | 30 48 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 15.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | 1,506 | B.56E-04 | J 81E-02 |
| 205965 Azenephthylene | 30 48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 7.54E+04 | | | 52.12 | 1,472 | 2 G6E-04 | 1 14E-02 |
| 53329 Acenephthene | 30.46 | 0.130 | 0.859 | 1.62E-08 | 0.380 | 6.33E-03 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54F+04 | 1.80E+08 | 2.22E-04 | 52.12 | 1,513 | 2.45E-04 | 1.05E-02 |
| 86737 Pluorene | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-02 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | | 1.80E+08 | 2.22E-04 | 52,12 | 16,123 | 3.67E-05 | 1.58E-03 |
| 85018 Phenonthrene | 30.48 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6 33F-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2.54E+04 2.54E+04 | 1.80E+08 | 2.22E-04 | 52.12 | 16,235 | 2.20E-08 | 9.46E-07 |
| 120127 Алён жине | 30.48 | 0.130 | 0.659 | 1.62E-00 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | | 1.50E+06 | 2.22E-04 | 52.12 | 1,479 | 1,14E-04 | 4 90E-03 |
| C9-C18 C9-C18 Allphatics | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | | | | | 2.54E+04 | 1.80E+06 | 2 22E-04 | 52.12 | 18,353 | 1.26E-05 | 5 43E-04 |
| C11-C22 C11-G22 Aromatics | 30.46 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 4.00E+03 | 2 54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | NA NA | 8 28E-01 | 3.56E+01 |
| C5-C8 C5-C8 Alphalics | 30.48 | 0.130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 18.75 | 0 43 | 0.127 | 0.303 | 4.00E+03 | 2 54E+04 | 1.80E+06 | 2.22E-04 | 52.12 | NA. | 3.60E-04 | 1.55E-02 |
| CS-C10 C9-C10 Aromatics | 30.48 | 0.130 | 0.659 | 1 62E-08 | 0.390 | | | 0.43 | 0,127 | 0.303 | 4.00E+03 | 2.545+04 | 1.80E+06 | 2.22E-04 | 52 12 | NA. | 6.48E-01 | 2.79E+01 |
| C9-C12 C9-C12 Allerhatics | 30.48 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 5.33E-09 | 18 75 | 0.43 | 0.127 | 0.303 | 4 00E+03 | 2.54E+04 | 1.80E+08 | 2.22E-04 | 52.12 | NA NA | 3.96E-03 | 1 70E-01 |
| | 30.40 | i u iad | 1 0.004 | 1.62E-08 | 0.390 | 6,33E-09 | 18.75 | 0 43 | 0.127 | 0 303 | 4.00E+03 | 2.54E+04 | 1.60E+06 | 2.22E-04 | 52,12 | N/A | 7 B0E-01 | 3 36E+01 |

-

Appendix C.4
Johnson & Ettinger Model - Calcutations Screen
Inhelation of Volatiles from Groundwater
Future Chief Resident Scenario - CT
Southwest Properties, Watte G&H Superfund Site, Oper.
Abertone Auto Partis

| | iemperature. | diffusion coefficient. | elfective diffusion coefficient. | effective diffusion coefficient. | Diffusion path tangth, | Convention seth length, | Source vector conc., | Crack redus, | Vecor flow rate into bidg., | Grack effective diffusion coefficient, | Area of crack. | equivalent foundation Peciet number, | source induor attenuation coefficient, | infinite source bidg. conc., | Unit risk factor, | Reference |
|--|----------------------|---------------------------|--|--|------------------------------|-------------------------------|----------------------------|-----------------|-----------------------------------|---|-------------------|---|---|---------------------------------------|-------------------------|----------------|
| | р _{тв} | D ^{ell} v | Dea | D ^{ef} | Ū. | L. | G | Formet | ٠ | October. | Arms | exp(Pe') | α | Canada | URF | RfC |
| | (g/cm+s) | (cm²(s) | (cm²/s) | (sm²/a) | (cm) | (cm) | (µg/m³) | (cm) | (cm ³ /4) | (cm²/a) | (cm²) | (unitless) | (unitiess) | (µg/m³) | (µg/m³)-1 | (mg/m²) |
| | | | | | | | | ,,,, | | | | | | | | |
| 71556 1,1,1-Trichlorceltrane | 1.75E-04 | 4.75E-04 | 4.45E-04 | 4.56E-04 | 30.48 | 52,12 | N/A | 0.10 | 5.22E+00 | 4,75E-04 | 4.00E+02 | 1.44E+179 | 1.72E-04 | N/A | N/A | 2.2E+00 |
| 76131 Trichloro-1,2,2-Inflouroethene, 1,1,2- | 1.75E-04 | 1.75E-04 | 1,63E-04 | 1.67E-04 | 30,45 | 52.12 | N/A | 0.10 | 5.22E+00 | 1.75E-04 | 4.00E+02 | #NUM! | 1.35E-04 | NA | N/A | 3.0E+01 |
| 79005 1,1,2-Trichloroethene | 1.75E-04 | 5,24E-04 | 4.95E-04 | 5.06E-04 | 30.48 | 52.12 | N/A | 6.10 | 5.22E+00 | 5.24E-04 | 4.00E+02 | 1,89E+162 | 1.75E-04 | N/A | 1.6E-05 | Z.2E+00 |
| 75343 (1,1-Dichloroethane | 1.75E-04 | 4.58E-04 | 4.29E-04 | 4.40E-04 | 30,40 | 52.12 | N/A | 0,10 | 5.725+00 | 4,58E-04 | 4.00E+02 | 6.94E+165 | 1.71E-04_ | N/A | N/A | 5.0E-01 |
| 75354 1,1-Dichlomethylene | 1.75E-04 | 5.47E-04 | 5.12E-04 | 5.25E-04 | 30.48 | | 7.42E+01 | 0.10 | 5.22E+00 | 5.47E-04 | 4.00E+02 | 3.87E+155 | 1.76E-04 | 1.31E-02 | N/A | 2.0E-01 |
| 120821 1,2,4-Trichlorobenzene | 1.75E-04 | 2.25E-04 | 2.14E-04 | 2.18E-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 2.25E-04 | 4.00E+02 | #NUMI | 1.46E-04 2.04E-04 | N/A N/A | N/A N/A | N/A |
| 95501 1,2-Dichlorobenzene | 1.75E-04 | 1.56E-02 | 1.60E-02 | 1.58E-02 | 30,45 | 52.12 | N/A | 0,10 | 5.22E+00 | 1.56E-02 | 4.00E+02 | 2.67E+05 | | N/A | N/A | N/A |
| 541731 Dichlorobenzane, 1,3- | 1.75E-04 | 2.56E-04 | 2.40E-04 | 2.46E-04 | 30.45 | 52.12 | N/A | 0.10 | 5.22E+00 | 2.56E-04 4.38E-04 | 4.00E+02 | #NUMI 1.36E+194 | 1.51E-04 1.70E-04 | 2.79E-03 | N/A N/A | 8.0E-01 |
| 106487 1,4-Dichurobenzene | 1.75E-04 | 4.36E-04 | 4.12E-04 | 4,22E-04 | 30.48 | 52.12 | 1.64E+01 | 0.10 | 5.22E+00 | | 4.00E+02 | 1.05E+90 | 1.70E-04 | 2,18E-03 | N/A | N/A |
| 78933 Butanone, 2- (MEK) 67641 Acetone | 1.75E-04 1.75E-04 | 9.45E-04 2.07E-03 | 9.27E-04 2.06E-03 | 9.34E-04 2.06E-03 | 30.48 | 52.12 52.12 | N/A | 0.10 | 5.22E+00 | 9.45E-04 2.07E-03 | 4.00E+02 | 1.40E+41 | 1.97E-04 | N/A | N/A | N/A |
| | 1.75E-04 | 5.42E-04 | 5.07E-04 | 5.20E-04 | 30.48 | | 0.68E+00 | 0.10 | 5.22E+00 | 5.42E-04 | 4.00E+02 | 1.40E+157 | .76E-04 | 1.53E-03 | 7.8E-06 | 3.0E-02 |
| 71432 Benzine 74839 Bromomethane | 1.75E-04 | 4.46E-04 | 4,18E-04 | 4.28E-04 | 30.46 | 52.12 | N/A | 0.10 | 5.22E+00 | 4.46E-04 | 4 00E+02 | 5.67E+190 | 1.70E-04 | N/A | N/A | 5.0E-03 |
| 75150 Cerbon Disulficie | 1.75E-04 | 6.34E-04 | 5,54E-04 | 6.09£-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 6.34E-04 | 4.00E+02 | 1.39E+134 | 1.79E-04 | N/A | NA | 7.0E-01 |
| 108907 Chiorobenzene | 1.75E-04 | 4.55E-04 | 4.27E-04 | 4.37E-04 | 30.45 | 52.12 | NA | 0.10 | 5.22E+00 | 4.55E-04 | 4.00E+02 | | 1.71E-04 | N/A | N/A | 6.0E-02 |
| 75003 Ethyl Chloride | 1.75E-04 | 7.66E-04 | 7.16E-04 | 7.34E-04 | 30.48 | 52,12 | N/A | 0.10 | 5.22E+00 | 7.66E-04 | 4.00E+02 | | 1.83E-04 | N/A | N/A | 1.0E+01 |
| 87663 Chiproform | 1.75E-04 | 6.43E-04 | 5,02E-04 | 5.17E-04 | 30.45 | 52.12 | N/A | 0.10 | 5.22E+00 | 6.43E-04 | 4 00E+02 | 2.93E+132 | 1.80E-04 | N/A | 23E-05 | 5.0E-02 |
| 156592 cis-1,2-Dichloroethylene | 1.75E-04 | 4.59E-04 | 4.30E-04 | 4.41E-04 | 30.48 | | 7.02E+02 | 0.10 | 5.22E+00 | 4.59E-04 | 4.00E+02 | | 1.71E-04 | 1.20E-01 | N/A | 2.0E-01 |
| 110627 Cyclohesane | 1.75E-04 | 4.65E-04 | 4.53E-04 | 4.65E-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 4.85E-04 | 4 00E+02 | | 1.73E-04 | NA | #N/A | #N/A |
| 100414 Ethylberizine | 1.75E-04 | 4.80E-04 | 4.31E-04 | 4.42E-04 | 30,48 | 52.12 | N/A | 0.10 | 5.22E+00 | 4.60E-04 | 4.00E+0Z | | 1.71E-04 | N/A | N/A | 1.0E+00 |
| 96825 (economisenzene | 1.75E-04 | 3.95E-04 | 3.70E-04 | 3.79E-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 3.95E-04 | 4.00E+02 | | 1.67E-04 | N/A | N/A | 4.0E-01 |
| 106672 Methyl cyclohecene | 1.75E-04 | 5.96E-04 | 5,59E-04 | 5.73E-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 5.98E-04 | 4.00E+02 | 2.65E+142 | 1.78E-04 | NA | N/A | 3.0E+00 |
| 1634044 Methyl-Tentary-Butyl Ether | 1.75E-04 | 6.67E-04 | 6.28E-04 | 6.43E-04 | 30,48 | 52,12 | N/A | 0,10 | 5.22E+00 | 6.67E-04 | 4.00E+02 | 4.02E+127 | 1,81E-04 | N/A | NA | 3.0E+00 |
| 75092 Methylene chloride | 1.75E-04 | 6.35E-04 | 5.96E-04 | 6.10E-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 6.35E-04 | 4.00E+02 | 1.12E+134 | 1,80E-04 | N/A | 4.7E-07 | 3,0E+00 |
| 127184 Tetrachioroethylene | 1.75E-04 | 4.39E-04 | 4.11E-04 | 4.21E-04 | 30,48 | 52.12 | 1.41E+02 | 0,10 | 5,22E+00 | 4.39E-04 | 4.00E+02 | | 1.70E-04 | 2.39E-02 | 5.9E-06 | N/A |
| 108883 Toluene | 1.75E-04 | 5.34E-04 | 5.00E-04 | 5.13E-04 | 30,48 | 52.12 | N/A | 0.10 | 5.22E+00 | 5,34E-04 | 4.00E+02 | | 1.75E-04 | N/A | N/A | 4.0E-01 |
| 159905 Irans-1,2-Dichlorcethylene | 1.75E-04 | 4.32E-04 | 4.04E-04 | 4.14E-04 | 30,48 | 52.12 | N/A | 0.10 | 5.22E+00 | 4.32E-04 | 4.00E+02 | 1.37E+197 | 1,69E-04 | N/A | N/A | 2.0E-01 |
| 79016 Trichicrosthylane | 1.75E-04 | 4 83E-04 | 4.52E-04 | 4.64E-04 | 30,48 | 52.12 | 4.43E+03 | 0.10 | 5.22E+00 | 4.63E-04 | 4.00E+02 | 1.52E+176 | 1.73E-04 | 7.56E-01 | N/A | 4.0E-02 |
| 75014 Vinyl chiloride | 1.75E-04 | 6.44E-04 | 6,02E-04 | 8.18E-04 | 30,48 | 52,12 | 1.47E+02 | 0.10 | 5.22E+00 | 6.44 E-04 | 4,00E,402 | 1.44E+132 | 1.80E-04 | 2.64E-02 | 5 6E-06 | 1,0E-01 |
| 1330207 Xylenes | 1.75E-04 | 3.75E-03 | 3.61E-03 | 3.79E-03 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 3.755-03 | 4.00E+02 | | 2.01E-04 | N/A | N/A | 1.0E-01 |
| 98562 Acelophenone | 1.75E-04 | 2.60E-03 | 2.64E-03 | 2.62E-03 | 30.45 | 52.12 | N/A | 0.10 | 5.22E+00 | 2,90E-03 | 4.00E+02 | | 1.09E-04 | N/A | N/A_ | N/A |
| 91203 Naphthalene | 1.75E-04 | 4,70E-04 | 4.50E-04 | 4.57E-04 | 30,45 | 57.12 | 8.86E+00 | 0.10 | 6.22E+00 | 4.70E-04 | 1,00E+02 | | 1,72E-04 | 1.536-03 | N/A | 3.0E-03 |
| 91576 Methylnaphthalene, 2- | 1.75E-04 | 3.13E-04 | 2.95E-04 | 3,02E-04 | 30,48 | 52.12 | N/A | 0.10 | 5.22E+00 | 3.13E-04 | 4.00E+02 | | 1.59E-04 | NVA. | N/A N/A | 3.0E-03 |
| 92524 Slpheryl, 1,1'- | 1.75E-04 | 3.16E-04 | 3.01E-04 | 3.06E-04 | 30.40 | 52.12 | N/A | 0,10 | 5.22E+00 | 3.15E-04 | 4.D0E+02 | | 1,69E-04 | NVA | N/A | N/A 3.0E-03 |
| 208968 Acanaphthylene | 1.75E-04 | 3.38E-04 | 3.22E-04 | 3.28E-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 3.38E-04 | 4.00E+02 | | 1.62E-04 | N/A N/A | N/A | |
| 83329 Acenephthene | 1.75E-04 | 7.33E-34 | 7.31E-04 | 7,32E-04 | 30.48 | 52.12 | N/A | 0.10 | 5.22E+00 | 7,33E-04 | 4.00E+02 | | | N/A | N/A N/A | 3.0E-03 |
| 86737 Fluorene | 1.75E-04 | 8.16E-01 | 4.39E-01 | 8,30E-01 | 30,46 | 52.12 | N/A | 0.10 | 5.22E+00 | 8.16E-01 | 4.00E+02 | | 9.61E-04 1.64E-04 | 1,68E-03 | N/A | 3.0E-03 |
| 85018 Phenenthrane | 1.75E-04 1.75E-04 | 3.50E-04 | 3.41E-04 | 3.44E-04 1.61E-03 | 30.48 | 52 12 52 12 | 1,03E+0t N/A | 0.10 | 5.22E+00 | 3,50E-04 1,60E-03 | 4.00E+02 | | 1.95E-04 | NA NA | N/A | 3.0E-03 |
| 120127 Antivesers | | 1.60E-03 | 1.62E-03 | | | | N/A | 0.10 | 5.22E+00 | 3.64E-04 | 4.00E+02 | | 1.64E-04 | NA. | N/A | 2.0E-01 |
| C9-C18 C9-C18 Aliphatics | 1.75E-04 1.75E-04 | 3.64E-04 4.27E-04 | 3.40E-04 4.05E-04 | 3.49E-04 4.13E-04 | 30.48 | 52.12 52.12 | N/A | 0.10 | 5.22E+00 | 4.27E-04 | 4.00E+02 | | 1.69E-04 | N/A | N/A | 5.0€-02 |
| C11-C22 C11-C22 Aromatics | 1.75E-04 | 3.54E-04 | 3.40E-04 | 3.49E-04 | 30.44 | 52.12 | N/A | 0.10 | 5.22E+00 | 3.64E-04 | 4.00E+02 | | 1.645-04 | N/A | N/A | 2.0E-01 |
| C5-C8 C5-C8 Alignatics | 1.75E-04 | 3.69E-04 | 3.46E-04 | 3.55E-04 | 30.45 | 52,12 | N/A | 0.10 | 5.22E-00 | 3.69E-04 | 4.00E+02 | | 1.65E-04 | N/A | N/A | 5.DE-02 |
| C9-C10 C9-C10 Arometics C9-C12 C9-C12 Alphatics | 1.75E-04 | 3.64E-04 | 3.40E-04 | 3.49E-04 | 30.48 | 52.12 | N/A | 0.10 | 3.ZZE+00 | 3.64E-04 | 4.00E+02 | | 1.64E-04 | N/A | N/A | 2.DE-01 |

Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volatiles from Groundwater
Future Child Resident Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RÍSK CALCULATIONS:

| I | | | | | | | | Incremental | Hazard |
|---------|---|----------------------|-------------------------|--------------------|------------------|-----------------------|----------|---------------------------|------------------------------|
| ļ | | Indoor | Indoor | Risk-based | Pure | Final | | risk from | quotient |
| | | exposure | exposure | indoor | component | indoor | | vapor | from vapor |
| | | groundwater | groundwater | exposure | water | exposure | | intrusion to | intrusion to |
| ľ | | conc., carcinogen | conc., noncarcinogen | groundwater conc., | solubility, S | groundwater conc., | | indoor air, carcinogen | indoor air, noncarcinogei |
| | | (μg/L) | (µg/L) | (μg/L) | (µg/L) | (μg/L) | | (unitless) | (unitless) |
| 7155 | 6 1,1,1-Trichioroethane | NA. | NA NA | NA NA | 1.33E+06 | NA | | NA NA | l na |
| 7613 | 1 Trichloro-1,2,2-triflouroethane, 1,1,2- | NA | NA NA | NA | 1.70E+05 | NA | | NA NA | NA. |
| 7900 | 5 1,1,2-Trichloroethane | NA | NA NA | NA | 4.42E+06 | NA | | NA NA | NA |
| 7534: | 3 1,1-Dichloroethane | NA | NA. | NA | 5.06E+06 | NA NA | | NA NA | NA NA |
| 7535- | 1 1,1-Dichloroethylene | NA NA | NA. | NA. | 2.25E+06 | NA NA | | NA NA | 4.2E-05 |
| 12082 | 1 1,2,4-Trichlorobenzene | NA | NA . | NA | 3.00E+05 | NA | | NA NA | NA |
| 9550° | 1 1,2-Dichlorobenzene | NA | NA, | NA | 2.77E+07 | NA NA | | NA. | NA. |
| 54173 | 1 Dichlorobenzene, 1,3- | NA | NA . | NA. | 6.B8E+04 | NA . | j | NA | NA. |
| 10646 | 7 1,4-Dichlorobenzene | NA NA | NA. | NA | 7.38E+04 | NA NA | | NA. | 2.2E-06 |
| | Butanone, 2- (MEK) | NA NA | NA | NA | 2.23E+08 | NA NA | | NA NA | NA NA |
| | 1 Acetone | NA NA | NA NA | NA. | 1.00E+09 | NA . | | NA NA | NA NA |
| | 2 Benzene | NA NA | NA. | NA NA | 1.75E+06 | NA | | 2.2E-10 | 3.2E-05 |
| 74839 | Promomethane | NA. | NA. | NA . | 1.52E+07 | NA. | | NA NA | NA NA |
| 75150 | Carbon Disulfide | NA. | NA. | NA NA | 2.67E+06 | NA. | | NA NA | NA NA |
| 108907 | 7 Chlorobenzene | NA NA | NA. | NA | 4.72E+05 | NA | | NA. | NA NA |
| 75003 | 3 Ethyl Chloride | NA | NA. | NA. | 5.32E+06 | NA NA | | NA NA | NA NA |
| | 3 Chloroform | NA | NA NA | NA NA | 7.92E+06 | NA. | | NA NA | NA NA |
| 156592 | cis-1,2-Dichloroethylene | NA | NA NA | NA. | 3.50E+06 | NA | | NA NA | 3.8E-04 |
| | 7 Cyclohexane | NA. | NA NA | NA. | 5.50E+04 | NA | | NA. | NA |
| | 1 Ethylbenzene | NA. | NA NA | NA. | 1.69E+05 | NA . | | NA NA | NA NA |
| | 3 Isopropylbenzene | NA NA | NA NA | NA. | 5.60E+04 | NA NA | | NA NA | NA NA |
| | Methyl cyclohexane | NA NA | NA NA | NA NA | 1.40E+04 | NA. | | NA NA | NA NA |
| | Methyl-Tertiary-Butyl Ether | NA NA | NA NA | NA I | 5.10E+07 | NA | - | NA NA | NA NA |
| | Methylene chloride | NA | NA. | NA NA | 1.30E+07 | NA. | | NA NA | NA NA |
| | Tetrachloroethylene | NA | NA. | NA NA | 2.00E+05 | NA | i | 2.6E-09 | NA NA |
| | 3 Toluene | NA | NA NA | NA NA | 5.26E+05 | NA | | NA NA | NA. |
| 156605 | trans-1,2-Dichloroethylene | NA | NA NA | NA NA | 6.30E+06 | NA | | NA NA | NA NA |
| | Trichloroethylene | NA | NA NA | NA NA | 1.10E+06 | NA | ŀ | NA. | 1.2E-02 |
| | Vinyf chloride | NA. | NA NA | NA NA | 2.76E+06 | NA NA | ŀ | 4.2E-09 | 1.7E-04 |
| | ' Xylenes | NA | NA | NA. | 2.20E+05 | NA | l | NA NA | NA. |
| | Acetophenone | NA | NA NA | NA NA | 6.13E+06 | NA NA | | NA. | NA. |
| | Naphthalene | NA. | NA . | NA NA | 3.10E+04 | NA | ł | NA NA | 3.3E-04 |
| | Methylnaphthalene, 2- | NA | NA NA | NA NA | 2.46E+04 | NA . | ł | NA NA | NA |
| | Biphenyl, 1,1'- | NA NA | NA NA | NA NA | 6.94E+03 | NA NA | ł | NA NA | NA NA |
| | Acenaphthylene | NA NA | NA NA | NA NA | 3.93E+03 | NA NA | | NA NA | NA NA |
| | Acenaphthene | NA NA | NA | NA . | 4.24E+03 | NA | ł | NA NA | NA NA |
| 86737 | Fluorene | NA NA | NA NA | NA NA | 1.90E+03 | NA NA | İ | NA NA | NA NA |
| 85018 | Phenanthrene | NA NA | NA NA | NA NA | 1.28E+03 | NA | ŀ | NA NA | 3.6E-04 |
| 120127 | Anthracene | NA NA | NA NA | NA AV | 4.34E+01 | NA | ŀ | NA NA | NA |
| C9-C18 | C9-C18 Aliphatics | NA NA | NA. | NA NA | 1.00E+04 | NA NA | <u> </u> | NA NA | NA NA |
| C11-C22 | C11-C22 Aromatics | NA NA | NA . | NA NA | 5.80E+06 | NA NA | <u> </u> | NA NA | NA NA |
| C5-C8 | C5-C8 Aliphatics | NA NA | NA NA | NA NA | 1.10E+07 | NA | | NA NA | NA. |
| C9-C10 | C9-C10 Aromatics | NA NA | NA NA | NA NA | 5.10E+07 | NA . | ŀ | NA I | NA NA |
| C9-C12 | C9-C12 Aliphatics | NA NA | NA NA | NA NA | 7.00E+04 | NA | } | NA NA | NA |

95% UCL
Cancer 95% UCL
Risk HI
TOTAL: 7E-09 1E-02

= Cancer risk > 1E-05 or HQ/HI>1E+00

END

| Appendix C.4 | Aodel - Data Entry Screen | | | | | | | | | | | | | | | | | , | | |
|-------------------------|---|---------------------------------------|----------------|------------------|----------------|----------------|-------------------|------|---------------|---------------|-------------|----------------|--|--|-----------------|---------------------------------------|---------------|------------|-----------|-----------|
| Johnson & Ettinger k | Acciel - Date Entry Screen | | | | | | | | | | | | | | | | | | | |
| Inhelation of Volatiles | ı fram Groundwater | | | | | | | | | | | | | | | | | | | |
| Future Child Recreet | ional Scenario - RME | | | | | | | | | | | | | | | | | | | |
| Southwest Promise, | Walls G&H Superjund Site, Operable (| July 3 | | | | | | | | | | | | | | | | | | |
| Whitney Barrel | | | | | | | | | | | | | | | | | | | | |
| l | | | | | | | | | | | | | | | | | | | | |
| CALCULATE DIEV | 01050 0000 0000 0000 | | | | | | | | | | | | | | | | | | | |
| TOWN CONTAINE HERSEN | BASED GROWNDWATER CONCENT | FLATION (water "X" in "Y | ES'box) | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | |
| 1 | YES | | | | | | | | | | | | | | | | | | | |
| L | OR | | | | | | | | - | | | | | | | | | | | |
| CALCULATE INCRE | MENTAL RISKS FROM ACTUAL GR | ****************************** | TTT LTDAY | | | | | | | | | | | | | | | | | |
| (enter "X" in "YES" b | ox and initial groundwater cone, below) | DOMESTIC SECTIONS FOR | NUMBER OF | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | YES X | | | | | | | | | | | | | | | | | | | |
| | | | ENTER | ENTER | ENTER | ENTER" | | | | | | | | | | | | | | |
| ENTER | | | Depth | | | | ENTER | | ENTER | | | | | | | | | | | |
| I CHIEK | | ENTER | below pracis | | | Average | Vedoes zone | | Upper-defined | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | CACTEO |
| Chemical | | 95% UCL | la battem | Depth | | acil/ | SC8 | | Vadose pone | Vadose zone | Vadose zara | Vadose zone | Target | Target hezard | Averaging | Averaging | LAIGR | ENIER | CHICK | ENTER |
| CAS No. | | distriction inter. | of enclosed | balaw grade | 8C8 | groundwater | act type | | sof vapor | poil dry | sof total | exit water-Med | riek for | quotient for | inne for | time for | - | _ | _ | |
| 1 | • | conc., | ebece floor, | to water totale, | 40f 0x0e | terriperatura, | (used to estimate | OR | permosality. | busk density. | porcetty. | percuity, | carcinopens, | nongardinogene. | CERCINOCENE. | noncercinogens, | Excesse | Exposure | Exposure | |
| (numbers only, | | C _w | با | LWT | directly above | T _a | soll vapor | | L | Pa V | ev. | B_Y | TR | | | | duration, | frequency, | tierre | fector |
| no desires) | Chemical | (µg/L) | (15 or 200 cm) | (gm) | water teble | (°C) | | | - Ta | | | | | THO | AT _C | ATec | ED | EF | EI | CF |
| | | · · · · · · · · · · · · · · · · · · · | (100 200 011 | 15/11/ | AND ROSE | (0) | permeability) | Note | (cm²) | (g/cm²) | (unidess) | (cm³/cm³) | (ynitiess) | (unitees) | (yre) | (yra) | (we) | (days/yr) | (hra/day) | (hre/yr) |
| 71668 | 1,1,1-Trichlorpethane | 4.62E+00 | 15 | 1 194 95 1 | | | | | | | | | | | | | | | | |
| 76131 | Trichloro-1.2.2-trifourcethane, 1.1.2- | 4.020100 | | 74.08 | LS | 10 | LS | _1_ | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | - 6 | 6 | 78 | 2.5 | 8760 |
| 79005 | | | 15 | 74.90 | L\$ | . 10 | L\$ | | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 6 | <u> </u> | 78 | 2.5 | 8760 |
| 76343 | 1.1.2-Trichkroethene | | 15 | 74 98 | LS | 10 | LS | 1 | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | · · · · · · · · · · · · · · · · · · · | | 78 | 2.5 | 8760 |
| 75354 | 1.1-Dichlorosthane | 1.20E+02 | 15 | 74.98 | L\$ | 10 | L8 | 1 | | 1,5 | 0,43 | 0.3 | 1.0E-05 | 1 1 | 70 | | | 78 | 2.5 | 8760 |
| 120821 | 1,1-Dichloroethylene | | 15 | 74.98 | LS | 10 | (\$ | - 1 | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | 6 | - 2 | 78 | 2.5 | 8760 |
| 95501 | 1.2.4-Trichieroberusce | | 15 | 74.98 | LS | 10 | LS | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | - · · | | 78 | 2.5 | 8760 |
| | 1.2-Dichlorobenzene | 7.43E+00 | 15 | 74.95 | s | 19 | LS | _ T | | 1,5 | 0.43 | 0.3 | 1.0E-06 | + ; | 70 | 6 | | - (0 | 2.5 | 8760 |
| 541731 106467 | Dichlorobenzene, 1,3- | 1,906-01 | 15 | 74.98 | LS | 10 | La | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | | | 78 | 2.5 | 8760 |
| | 1.4-Dichlorobenzene | 1.97E+02 | 15 | 74.98 | L\$ | 10 | LS | 7 | | 1.5 | 0.43 | 0.3 | 1,0E-08 | | 70 | | 6 | 78 | 2.6 | 8760 |
| 78933 | Butanone, 2- (MEK) | | 16 | 74.98 | LS | 10 | L8 | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | ······ | 8 | | 2.5 | 8780 |
| 97641 71432 | Acetone | | 16 | 74.98 | LS | 10 | L6 | ~ | | 1.5 | 0.43 | 0.3 | 1.0E-08 | | 70 | | | 78 | 2.5 | 8760 |
| 74839 | Berzene | 8.60E+01 | 15 | 74.90 | .3 | 10 | LS | | | 1.5 | 0.43 | 0.3 | 1.0E-06 | · · · · · · · · · · · · · · · · · · · | % | | | 78 | 2.5 | 8760 |
| 75150 | Bromomethene | | 15 | 74.98 | LS | 70 | .5 | 7 | | 1.6 | 0.43 | 0.3*** | 1.0E-06 | 1 1 | 70 | | | 78 | 2.5 | 8760 |
| 108907 | Carbon Disulfide | | 15 | 74.96 | LS | 10 | LS. | - 7 | | 15 | 0.43 | 0.3 | 1.0E-00 | | 70 | | - 6 | 78 | 2.5 | 8760 |
| | Chioroberzene | 1,80E+01 | 15 | 74.98 | LS | \$0 | LS. | | | 1.5 | 0.43 | 0.3 | 1,0E-08 | | 70 | | | 78 | 2.5 | 8760 |
| 75003 67683 | Ethyl Chloride | | 15 | 74.98 | L9 | 10 | LS | 7 | | 1,5 | 0.43 | 0.3 | 1,05-06 | | 70 | | | 78 | 2.5 | 8760 |
| 156592 | Chloroform | | 16 | 74.98 | LS | 10 | LŞ | _1 | | 1,5 | D.43 | 0.3 | 1,05-06 | i | 70 70 | } | 6 | 78 | 2.5 | 8760 |
| 110827 | cis-1.2-Dichloroethylene | 4.80E+02 | 18 | 74.98 | L8 | 10 | LS | 7 | | 1.8 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | 4 | | 78 | 2.6 | 8780 |
| 100414 | Cyclohecare | | 18 | 74 pe | L\$ | 10 | LS | 4 | | 1.5 | D.43 | 0.3 | 1,95-06 | 1 i ··· | 70 | - | | 78 | 2.5 | 8760 |
| 96628 | Etyberzere | 4,00E+01 | 15 | 74.95 | 2.5 | 10 | .3 | _1 | | 1.5 | D.43 | D.3 ; | 1.0E-08 | † i | 70 | | - 8 | 78 | 25 | 8760 |
| 198872 | popropy/benzene | | 15 | 74.98 | 1,5 | 10 | 18 | | | 1.5 | 0.43 | 0.3 | 1.0E-08 | | 70 | | | 78 | 25- | 8780 |
| 19312 | Methyl syclohecene | | 15 | 74.98 | LS. | 10 | 38 | | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | <u> </u> | | 78 | 25 | 8760 |
| 1634044 75092 | Methyl-Tertlary-Busyl Ether | 5.40E+02 | 15 | 74,98 | 18 | 10 | LS. | 1 " | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | ř | <u></u> | 78 | 2.5 | 8760 |
| 127184 | Methylene chloride | | 16 | 74,98 | LS | 10 | S | | | 1.5 | 5.43 | 0.3 | 1,0E-06 | 1 1 | 70 | ž | | | 2.5 | 8750 |
| 108883 | Tetrachiorogritylene | | 15 | 74.98 | rs | 10 | Ş | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-05 | 1 1 | 70 | | - 4 | 78 | 2.5 | 8750 |
| 156606 | Tokene | 1.20E+03 | 15 | 74,98 | LS. | 10 | ĻS. | 4. | | 1.5 | 0,43 | 0,3 | 1.0E-05 | i | 70 | 6 | A | 75 | 1.5 | 8750 |
| 79016 | Farse 1.2 Dichloroethylana | 1.60E+01 | 15 | 74.98 | LS | 10 | LŞ. | _1 | | 1.5 | 0.43 | 0,3 | 1.0E-05 | 1 1 | 70 | | Ř | 76 | 2.5 | ** 8780 T |
| 75014 | Trichlorostrylana | 2,00€+00 | 15 | 74.95 | Ų.S | 10 | LS | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | <u>v</u> | | 78 | 2.5 | 8750 |
| 1330207 | Vind chloride | 4.20E+02 | 15 | 74.98 | L5 | 10 | LB | т. | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | | | 78 | 2.5 | 8780 |
| 98962 | XVienes | | 15 | 74,98 | LS | 10 | L\$ | | | 1,5 | 0.43 | 0.3 | 1.05-06 | 1 | 70 | | <u> </u> | 78 | 2.5 | 8760 |
| 91203 | Acetophenone | | 16 | 74.95 | LS | 10 | LS | -1- | | 1.5 | 0.43 | 0.3 | 1.DE-06 | 1 1 | 70 | ř | | 78- | 2.5 | 8760 |
| 91576 | Nachthalene | 9.60E+01 | 15 | 74.95 | LS | 10 | | 1 | | 1.5 | 0.43 | 0.3 | 1,0E-06 | i | 70 | - 6 | - | | 2.5 | 8760 |
| | Metromothylene 2: | | 15 | 74.98 | ĻS | 10 | L5 | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | y . | - 8 | 78 | 75 | 8760 |
| 92524 | Biotheryl, 1,17- | 7.000.00 | 15 | 74.96 | LS | 10 | LS | _ | | 1.5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | 2 | | 78 | 2.5 | 8780 |
| 205955 83329 | Aconophinisme | 1.20E+00 | 15 | 74.90 | L8 | . 10 | L\$ | 7 | | 1.5 | 0.43 | 0.3 | 1.05-06 | | 70 | 8 | - | 78 | 2.5 | 8760 |
| 96737 | Acensonthone | | 15 | 74.98 | LS | 10 | L8 | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-08 | | 70 | | | | 2.5 | 8760 |
| 85018 | Flucrene | | 15 | 74.98 | ta | 10 | 1.5 | 4 | | 1.5 | 0.43 | 0.3 | 1.0E-95 | ; | 70 | - 8 | - 2 | 78 | 2.5 | 8750 |
| | Phenanthrene | 3.10E+00 | 15 | 74,98 | ĻŞ | 10 | LS. | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-05 | 1 | 70 | | | 78 | 25 | 8750 |
| 120127 | Antivacana | | 15 | 74.98 | LS | 10 | L5. | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-08 | + ; + | 70 | | | 78 | 25 | 8750 |
| C9-C18 C11-C22 | C9-C18 Aliohatica | 5.90E+01 | 15 | 74.96 | LS. | 10 | LS | 1. | | 1,5 | 0.43 | 0.3 | 1.0E-05 | 1 3 | 70 | <u>P</u> | | 78 | 2.5 | 8760 |
| C5-C8 | C11-C22 Aromatica | | 15 | 74.00 | 1.5 | 10 | LS | . 1 | | 1.6 | 0.43 | 0.3 | 1.0E-09 | | 70 | | - 6 | 78 | 2.5 | 9750 |
| C9-C10 | C5-C8 Allohatica | 4.48E+02 | 15 | 74 98 | .8 | 10 | LS | _1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 | ¥ | | 78 | 2.5 | 8760 |
| | C9-C10 Aromatics | | 15 | 74.98 | .8 | 10 | | - 1 | | 1,5 | 0.43 | 0.3 | 1.0E-06 | () | / 6 | ¥ | } | 78 | 2.5 | 8760 |
| C9-C12 | CS-C12 Allphatics | 6.00E+01 | 15 | 74.98 | 15 | 10 | 18 | | | | N 45 | | <u>!!? </u> | | | | | | 43 | 0100 |

¹⁾ Durlant exit personnelment from table 7 or User's Quide for Evelvating Submarisms Vapor Intrusion feed Building (U.S. EPA June 19, 2003) were used for early value filled porosity (E.), and organic cerbon fraction (fu.), and total porosity (n), and sold dry build density (n).

| <u> </u> | Appendix C.4 | | | | | | | | | | | |
|----------|--|----------------------|--|----------------------|----------------|-----------------|------------------|------------------|----------------------|-------------|------------------------------------|-----------|
| | Johnson & Ettinger Model - Chem | | es Screen | | | | | | | ···· | | |
| | Inhalation of Volatiles from Groun | | | | | | | | | | | |
| | Future Child Recreational Scenar | | | | | | | | | | | |
| | Southwest Proerties, Wells G&H | Superfund S | ite, Operable | Unit 2 | | | | | | | | |
| | Whitney Barrel | | | | | | | | | | | |
| | | | | | | | | | | | | |
| İ | | | | | | | | | | | | |
| | | | | | | | , | | | | | |
| | | | | Henry's | Henry's | Enthalpy of | | | Organic | Pure | | |
| | | | | law constant | law constant | vaporization at | Normal | | carbon | component | Unit | |
| | | Diffusivity | Diffusivity | at reference | reference | the normal | boiling | Critical | partition | water | risk | Reference |
| | | in air, | in water. | temperature, | temperature, | boiling point, | point, | temperature, | coefficient, | solubility, | factor, | conc., |
| Chemical | | D _a | D _w | Н | T _R | ΔH_{vh} | Тв | T _C | K _{oc} | S | URF | RfC |
| ÇAS No. | Chemical | (cm²/s) | (cm ² /s) | (atm-m³/mol) | (°C) | (cal/mol) | (°K) | (°K) | (cm ³ /g) | (mg/L) | (μg/m ³) ⁻¹ | (mg/m³) |
| ÇAS 140. | Chemical | (CIII 75) | (CIII 7S) | (atment anoi) | (0) | (cainhoi) | (10) | (\(\(\) \) | (Gitt 7g) | (mg/L) | (µg/iii) | (mg/m) |
| 71556 | 1,1,1-Trichloroethane | 7 905 00 | 8.80E-06 | 4 705 00 | 25 | 7 126 | 247.24 | E45.00 | 1.105+03 | 1.33E+03 | N/A | 2.2E+00 |
| 76131 | Trichloro-1,2,2-triflouroethane, 1, | 7.80E-02 2.88E-02 | 8.07E-06 | 1.72E-02 5.17E-01 | 25 25 | 7,136 1,326 | 347.24 320.70 | 545.00 481.05 | 1.10E+02 2.25E+02 | 1.70E+02 | N/A | 3.0E+01 |
| 79005 | 1,1,2-Trichloroethane | 7.80E-02 | 8.80E-06 | 9.12E-04 | | 8,322 | 386.15 | 602.00 | 5.01E+01 | 4.42E+03 | 1.6E-05 | 2.2E+00 |
| 75343 | 1,1-Dichloroethane | 7.42E-02 | 1.05E-05 | 9.12E-04 5.61E-03 | 25 25 | | 330,55 | 523.00 | 3.16E+01 | 5.06E+03 | N/A | 5.0E-01 |
| 75354 | 1,1-Dichloroethylene | 9.00E-02 | 1.05E-05 1.04E-05 | | | 6,895 | 304.75 | | | 2.25E+03 | N/A | 2.0E-01 |
| 120821 | | | | 2.61E-02 | 25 26 | 6,247 | | 576.05 | 5.89E+01 | 3.00E+02 | N/A N/A | 2.0E-01 |
| 95501 | 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene | 3.00E-02 6.88E-02 | 8.23E-06 9.41E-06 | 1.42E-03 1.62E-06 | 25 25 | 10,471 1,223 | 486.15 465.00 | 725.00 697.50 | 1.78E+03 5.34E+01 | 2.77E+04 | N/A N/A | N/A |
| 541731 | | | 8.85E-06 | | 45 | | | | | | N/A N/A | N/A |
| 106467 | Dichlarobenzene, 1,3- | 4.14E-02 | | 4.70E-03 | 25 | 1,242 | 446.00 | 683.96 | 1.70E+02 | 6.88E+01 | | |
| | 1,4-Dichlorobenzene | 6.90E-02 | 7.90E-06 | 2.43E-03 | 25 | 9,271 | 447.21 | 684.75 | 6.17E+02 | 7.38E+01 | N/A | 8.0E-01 |
| 78933 | Butanone, 2- (MEK) | 8.08E-02 | 9.80E-06 | 5.60E-05 | 25 | 1,311 | 352.50 | 528.75 | 3.83E+00 | 2.23E+05 | N/A | N/A |
| 67641 | Acetone | 1.24E-01 | 1.14E-05 | 3.88E-05 | 25 | 6,955 | 329.20 | 508.10 | 5.75E-01 | 1.00E+06 | N/A | N/A |
| 71432 | Benzene | 8.80E-02 | 9.80E-06 | 5.56E-03 | 25 | 7,342 | 353.24 | 562.16 | 5.89E+01 | 1.75E+03 | 7.8E-06 | 3.0E-02 |
| 74839 | Bromomethane | 7.28E-02 | 1.21E-05 | 6.22E-03 | 25 | 1,362 | 276.50 | 414.75 | 1.43E+01 | 1.52E+04 | N/A | 5.0E-03 |
| 75150 | Carbon Disulfide | 1.04E-01 | 1.29E-05 | 1.27 E- 02 | 25 | 6,391 | 319.00 | 552.00 | 5.14E+01 | 2.67E+03 | N/A | 7.0E-01 |
| 108907 | Chlorobenzene | 7,30E-02 | 8.70E-06 | 3.71E-03 | 25 | 8,410 | 404.87 | 632.40 | 2.19E+02 | 4.72E+02 | N/A | 6.0E-02 |
| 75003 | Ethyl Chloride | 1.26E-01 | 6.50E-06 | 8,67E-03 | 25 | 1,355 | 249,00 | 373.50 | 1.43E+01 | 5.32E+03 | N/A | 1.0E+01 |
| 67663 | Chloroform | 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 6,988 | 334.32 | | 3.98E+01 | 7.92E+03 | 2.3E-05 | 5.0E-02 |
| 156592 | cis-1,2-Dichloroethylene | 7.36E-02 | 1.13E-05 | 4.07E-03 | 25 | 7,192 | 333,65 | 544.00 | 3.55E+01 | 3.50E+03 | N/A_ | 2.0E-01 |
| 110827 | Cyclohexane | 8.00E-02 | 9.00E-06 | 2.00E+00 | 25 | 1,309 | 353.85 | 530.78 | 1.60E+02 | 5.50E+01 | #N/A | #N/A |
| 100414 | Ethylbenzene | 7.50E-02 | 7.80E-06 | 7.88E-03 | 25 | 8,501 | 409.34 | 617.20 | 3.63E+02 | 1,69E+02 | N/A | 1.0E+00 |
| 98828 | Isopropylbenzene | 6.50E-02 | 7,83E-06 | 1.47E-02 | 25 | 1,259 | 425.40 | | 9.31E+03 | 5.60E+01 | N/A | 4.0E-01 |
| 108872 | Methyl cyclohexane | 9.86E-02 | 8.52E-06 | 4.23E-01 | 25 | 1,296 | 373.90 | 560.85 | 2.68E+02 | 1.40E+01 | N/A | 3.0E+00 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1.02E-01 | 1.05E-05 | 5,87E-04 | 25 | 1,324 | 328.36 | 497.11_ | 3.84E+01 | 5.10E+04 | N/A | 3.0E+00 |
| 75092 | Methylene chloride | 1.01E-01 | 1.17E-05 | 2.19E-03 | 25 | 6,706 | 313.00 | 510.00 | 1.17E+01 | 1,30E+04 | 4.7E-07 | 3.0E+00 |
| 127184 | Tetrachloroethylene | 7.20E-02 | 8.20E-06 | 1.84E-02 | 25 | 8,288 | 394.40 | 620.20 | 1.55E+02 | 2.00E+02 | 5.9E-06 | N/A |
| 108883 | Taluene | 8.70E-02 | 8.60E-06 | 6.63E-03 | 25 | 7,930 | 383.78 | 591.79 | 1.82E+02 | 5.26E+02 | N/A | 4.0E-01 |
| 156605 | trans-1,2-Dichloroethylene | 7.07E-02 | 1,19E-05 | 9,39E-03 | 25 | 1,333 | 320,85 | 516,50 | 5.25E+01 | 6.30E+03 | N/A | 2.0E-01 |
| 79016 | Trichloroethylene | 7.90E-02 | 9.10E-06 | 1.03E-02 | 25 | 7,505 | 360.36 | | 1.66E+02 | 1.10E+03 | N/A | 4.0E-02 |
| 75014 | Vinyl chloride | 1.06E-01 | 1.23E-05 | 2.71E-02 | 25 | 5,250 | 259.25 | 432.00 | 1.86E+01 | 2,76E+03 | 8.8E-06 | 1.0E-01 |
| 1330207 | Xylenes | 7.69 E- 02 | 8.44E-06 | 6.73E-06 | 25 | 1,264 | 417.40 | 616.21 | 2.41E+02 | 2.20E+02 | N/A | 1.0E-01 |
| 98862 | Acetophenone | 6.00E-02 | 8.73E-06 | 1.02E-05 | 25 | 1,214 | 475.00 | 712.50 | 4.62E+01 | 6.13E+03 | N/A | N/A |
| 91203 | Naphthalene | 5.90E-02 | 7.50E-06 | 4.83E-04 | 25 | 10,373 | 491.14 | 748.40 | 2.00E+03 | 3.10E+01 | N/A | 3.0E-03 |
| 91576 | Methylnaphthalene, 2- | 4.84E-02 | 7.75E-06 | 1.01E-03 | 25 | 1,169 | 514.05 | | 8.51E+03 | 2.46E+01 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 4.04E-02 | 8.15E-06 | 3.03E-04 | 25 | 1,149 | 529.10 | 793.65 | 6.25E+03 | 6.94E+00 | N/A | N/A |
| 208968 | Acenaphthylene | 4.43E-02 | 7.44E-06 | 2.80E-04 | 25 | 1,118 | 553.00 | | 4.79E+03 | 3.93E+00 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 4.21E-02 | | 1.55E-04 | 25 | 12,155 | 550.54 | | 7.08E+03 | 4.24E+00 | N/A | 3.0E-03 |
| 86737 | Fluorene | 3.63E-02 | 7.88E-06 | 9.41E-08 | 25 | 12,666 | 570.44 | | 7.71E+03 | 1.90E+00 | N/A | 3.QE-03 |
| 85018 | Phenanthrene | 3.30E-02 | 7.47E-06 | 1.30E-04 | 25 | 1,057 | 613,00 | ., | 1.41E+04 | 1.28E+00 | N/A | 3.0E-03 |
| 120127 | Anthracene | 3.24E-02 | | 6.51E-05 | 25 | 13,121 | 615.18 | | 2.95E+04 | 4.34E-02 | N/A | 3.0E-03 |
| C9-C18 | C9-C18 Aliphatics | 6.00E-02 | 1.00E-05 | 1.66E+00 | 25 | NA NA | NA | NA | 6.80E+05 | 1.00E+01 | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 6.00E-02 | 1.00E-05 | 7.32E-04 | 25 | NA NA | NA. | NA NA | 5.00E+03 | 5.80E+03 | N/A | 5.0E-02 |
| C5-C8 | C5-C8 Aliphatics | 6.00E-02 | 1.00E-05 | 1.30E+00 | 25 | NA NA | NA | NA NA | 2.27E+03 | 1.10E+04 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 6.00E-02 | • • | 7,92E-03 | 25 | NA NA | NA NA | NA NA | 1.78E+03 | 5.10E+04 | N/A | 5.0E-02 |
| C9-C12 | C9-C12 Aliphatics | 6.00E-02 | | 1.56E+00 | 25 | NA NA | NA NA | NA NA | 1.50E+05 | 7.00E+01 | N/A | 2.0E-01 |
| OD-012 | On-o is Unbusines | U.VUE-UZ | 1.00=-00 | 1,000,700 | 1 20 | I IVA | 18.75 | 1 144 | 1.50E=05 | 7.50€,101 | IN/A | _ Z.VE=V1 |

Appandix C.A
Johnson A. Eltinger Model - Calculations Screen
Inhisation of Votalities from Groundwater
Fruns Child Rectnetions Screenio - RAIE
Southwest Physics, Welle O&H Superfund Ste, Operable Unit 2
Whitney Samel

| | | Source- building ever aton, | Various 20ne soil sir-filled paroesty | Vactors zone effective total fluid esturation, | Vedose zone acit intrinsic sermesbility, | Various zone eoli reinika pir purmeability, | Valore zone acil effective vacor permeability. | Thickness of capillary zons, | Total corosity in capillary gone, | Air-filed parasity in coolisty 2010. | Water-Med scrooky in capitary zona, | Ficor- wali eeem parimater, | Bildq. veniliation refe. | Area of enciceed space below grade. | Creck- to-total area ratio. | Crack depth below prade. | Enthalpy of vaporization at ave, proundwater temperature | Hernvis law constant at ave, groundwater temperature. | Herev's law constant at we groundwas temperature. | Vapor viscosity at ave, soil temperature. |
|-------|---|-----------------------------------|--|---|---|--|---|------------------------------------|--|---|--|--------------------------------------|--------------------------------|---|--------------------------------------|-----------------------------------|---|--|--|--|
| | | L _T | 6,7 | 8. | A __ | L . | k, | _ | ^- | 5 | a | Xcrack | Charme | A | | Z | ∆H.m | Hra | H** | |
| | | ((1 75) | (cm³/cm³) | (cm³(cm³) | (zm²) | (cm²) | (cm²) | ((311) | (cm³/cm³) | (cm²/cm²) | (cm²/cm²) | (ETT) | (om ¹ /s) | () | (Uniforms) | (cm) | (cel/mol) | (atm-m³/mol) | | 3474 |
| | | | | | | | | | | 1 | (| | 10111197 | (6.71) | (Asyces) | (ciii) | (cermor) | (acri-m /moi) | (unidees) | (g/cm-s) |
| 556 | 1,1,1-Trichioroethene | 59,98 | 0.130 | 0,659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 4 72E404 | 2.52E+08 | 0.606.00 | 1,30E-04 | 15 | 7,885 | | | |
| 1131 | Trichloro-1,2,2-triflouroethane, 1,1,2- | 69,95 | 0.130 | 0,659 | 1.62E-06 | 0.390 | 6.33∈-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 1,306-04 | 15 | 1,436 | 8,50E-03 | 3.66E-01 | 1.75E-04 |
| | 1,1,2-Trichkorpethane | 56.99 | 0.130 | 0,669 | 1.62E-08 | 0.380 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1725404 | 2.525+00 | 0.50E+06 | 1,30E-04 | 15 | | 4.66E-01 | 1.98E+01 | 1.765-04 |
| 354 | 1.1-Dichlorophum | 59,98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.336-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1725-14 | 2.52E+00 | 0.505400 | 1.30E-04 | 15 | 9,572 7,450 | 3.66E-04 | 1.67E-02 | 1.766-04 |
| 0821 | 1,1-Dichloroethylene | 59,98 | 0.130 | 0.059 | 1.82E-08 | 0.390 | 6.33E-09 | 18.75 | 0,43 | 0.127 | 0.303 | 1725-404 | 2.52E+00 | 9.50C-100 | 1.30E-04 | 15 | 6.392 | 2,86E-01 | 1.24E-01 | 1.75E-64 |
| | 1,2,4-Trichkorobenzene | 66.98 | 0,130 | 0.659 | 1.625-06 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 9.127 | 0.303 | | 2.52E+05 | | 130E-04 | 13 | 13,230 | 1.475-02 4.35E-04 | 6,34E-01 | 1.752-04 |
| 1731 | 1.2-Dichlerober.come | 55,98 | 0.135 | 9,050 | 1.625-08 | 0.300 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+00 | | 1.30E-04 | 16 | 1.521 | 1.41E-06 | 87E-02 | 1.76€-04 |
| | Dichlorobertgene, 1,3- | 59,98 | 0.130 | 0.650 | 1.62E-08 | 0.300 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 1305 01 | 16 | 1,503 | 4.11E-03 | 1,77E-01 | 1,75E-04 1,76E-04 |
| 933 | 1.4-Dichigrobenzene | 59.96 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 0,33E-09 | 15.75 | 0,43 | 0.127 | 0.303 | | 2.52E+06 | | 1,306-04 | 15 | 17,243 | 8.89E-04 | 3.63E-02 | 1.76E-04 |
| 1541 | Butanone, 2- (MEX) | 59,98 | 0,130 | 0,659 | 1.02E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0,127 | 0.303 | 1.72F+04 | 2.52E+06 | 9.50F+05 | 1.30E-04 | 15 | 1,486 | 4 90E-05 | 2.11E-03 | 1.75E-04 |
| 432 | Berme | 59.98 | 0,130 | 0.669 | 1.02E-08 | 0.390 | 6.33E-09 | 18.75 | 0,43 | 0.127 | 0.303 | | 2.62E+06 | | 1,30E-04 | 15 | 7,559 | 1.97E-05 | 0.50E-04 | 1.756-04 |
| 839 | Bromomehane | 59,98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,76 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 1.30E-04 | 15 | 8,122 | 2.59E-03 | 1.16E-01 | 1.75E-04 |
| 150 | Carbon Disutide | 56.60 | 0.130 | 0,659 | 1,625-08 | 0.390 | 0.33E-00 | 18.76 | 0.43 | 0.127 | 0,303 | | 2.52E+08 | | 1.30E-04 | 15 | 1,337 | 5.52E-03 | 2.38E-01 | 1.75E-04 |
| 8907 | Chiorobenzene | 56.95 | 0.130 | D,650 | 1,62€-08 | 0.390 | 6.33#-09 | 18.76 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 1.30E-04 | 15 | 6,662 | 6.99E-03 | 3,01E-01 | 1.75E-04 |
| 003 | | 60.98 | 0.130 | 0.659 | 1,62E-08 | 0.390 | 5.33E-09 | 18.76 | 0.43 | 0,127 | 0.363 | | 2.62E+00 | | 1.30€-04 | 15 | 9,803 | 1.54E-03 | 5.65E-02 | 1,75E-04 |
| 663 | Ethyl Chloride Chloroform | 59.98 | 0.130 | D,658 | 1.62E-08 | D,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72F+04 | 2.52E+08 | 9 50F+08 | 1 30F 04 | 15 | 1,201 | 7.79E-03 | 3.35F-01 | 1,75E-04 |
| 6592 | cie-1.2-Oichiorostivierie | 69.98 | 0.130 | 0,859 | 1.62E-08 | 9.390 | 6,33E-09 | 18,76 | 0.43 | 0.127 | 0.303 | | 2.52E+08 | | 1.30E-04 | 15 | 7,854 | 1.86E-03 | 8.02E-02 | 1.75E-04 |
| 0827 | Cyclohecane | 59,96 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.335-09 | 18.75 | 0,43 | 0.127 | 0.303 | 1.72F+04 | 2.52€+06 | 9.505+06 | 1 30E 04 | 15 | 7,734 | 2.04E-03 | 6.77E-02 | 1.75E-04 |
| 0414 | Ethylbenzene | 59.98 | 0.130 | 0.659 | 1.82E-08 | 0,300 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72F+04 | 2.62E+06 | 9 FOEANS | 1.30E-04 | 15 | 1.486 | 1.76E+00 | 7.54E+01 | 1,75E-04 |
| 828 | | 59,90 | 0.130 | 0.669 | 1.82E-08 | 0,390 | 6,33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 1.72F+04 | 2.52E+06 | 9 SYEARS | 30E-04 | 18 | 10,155 | 3.18E-03 | 1.37E-01 | 1.75E-04 |
| 8672 | leopropy/benzene | 59,96 | 0.130 | 0.659 | 1.52E-08 | 0,390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0,303 | 1.72E+04 | 2 52€ +05 | 9 ME-OR | 30E-04 | - 15 | 1,540 | | 5.51E-01 | |
| 34044 | Methyl cyclohecupe | 50.94 | 0.130 | 0.669 | 1.82E-08 | 0.390 | 8.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+08 | | | 15 | 1,605 | 1,28E-02 3,70E-01 | 1.50E+01 | 1,75E-04 1,75E-04 |
| 092 | Methyl-Tertiany-Butyl Ether Methylene chloride | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 5,33E-Q9 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 1.30E-04 | 15 | 1,447 | 5,16E-04 | 2,22E-02 | 1.75E-04 |
| 7184 | Tetrachiorostin/ene | 69,98 | 0,130 | 0,669 | 1.62E-08 | 0.390 | 5,33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | | 15 | 7.034 | 1,17E-03 | 5.03E-02 | 1.75E-04 |
| 6883 | Toluene | 59,98 | 0.130 | 0.669 | 1.52E-08 | 0.390 | 6,336-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | | 15 | 9.653 | 7,83E-03 | 3.37E-01 | 1,75E-04 1,75E-04 |
| 6605 | | 59,90 | 0.130 | 0.660 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.525+06 | 9.505+04 | 1.30E-04 | 15 | 9.164 | 2.92E-03 | 1.28E-D1 | 1.75E-04 |
| 016 | trans-1,2-Dichlorosthylene Trichlorosthylene | 59,98 | 0,130 | 0.650 | 1,62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+05 | 1.30E-04 | 15 | 1,417 | 8.27E-03 | 3.56E-01 | 1,75E-04 |
| | Vinyi chloride | 69,98 | 0,130 | 0.859 | 1.62E-06 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0,127 | 0,303 | | 2.52E+06 | | | 15 | 8,557 | 4.79E-03 | 2.05E-01 | 1,75E-04 |
| 30207 | Avience | 59.98 | 0.130 | 0.659 | 1,62E-08 | 0.390 | 6,33E-00 | 18,75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | | 9.50E+06 | 1.30E-04 | 15 | 5.000 | 1,795-02 | 7.465-01 | 1.75E-04 |
| 862 | Acessoherione | 59.98 | D, 136 | 0.669 | 1.626-08 | 0.350 | 6.33E-09 | 18.75 | 0 43 | 0.127 | 0.303 | | 2.52E+06 | | 1.30E-04 | 15 | 1,542 | 5.86E-06 | 2.52E-04 | 1.76E-04 |
| 203 | Nachhalene | 59,98 | 0,130 | 0.556 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2,526+06 | | 1.30E-04 | 15 | 1,518 | 8,91E-08 | 3.636-04 | 1.75E-04 |
| 576 | McCrytraphthalarm, 2- | 59.86 | 0.130 | 0.650 | 1.42E-08 | 0,390 | 6.33E-09 | 18,76 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 30F 04 | - 12 | 12,913 | 1,525-04 | 6.55E-03 | 1.75E-04 |
| 524 | Biphary 1.1% | 59.98 | 0.130 | 0.669 | 1.62E-08 | 0.360 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.52E+08 | | 1.30E-04 | 15 | 1,505 | 5,85E-04 | 3.81E-02 | 1.76E-04 |
| 8988 | Acemphitylene | 59.95 | 0.130 | 0.659 | 1,025-06 | 0,390 | 4 33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.52E+08 | | 130F-04 | 15 | 1472 | 2.66E-04 | 1.14E-02 | 1.75E-D4 |
| | Acensphilyene | 59.98 | 0.130 | 0.689 | 1,52E-08 | 0.360 | 6,33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 1.30E-04 | | 1,513 | 2,45E-04 | 1.05E-02 | 1.75E-04 |
| 737 | Fluorene | 50 58 | 0,130 | 0.659 | 1.62E-05 | 0.350 | 0.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+08 | | 1,30E-04 | 15 | 16,123 | 3,676-08 | 1.58E-03 | 1.78E-04 |
| 018 | Phenanthyme | 59.95 | 0.130 | 0,680 | 1.62E-08 | 0.393 | 6,33E-09 | 18,76 | 0.43 | 0.127 | 0.303 | | 2.525+00 | | 1.30E-04 | 15 | 16,235 | 2,206-08 | 9,48E-07 | 1,755-04 |
| | Andrease Andrease | 50,98 | 0,130 | 0.659 | 1.6ZE-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | 1,30F.04 | 15 | 1,479 | 1.14E-04 | 4.80E-03 | 1,765-04 |
| HC18 | C9-C18 Allehatics | 59,98 | 0,130 | 0.659 | 1.62E-08 | D.390 | 6.33E-09 | 15,75 | 0.43 | 0.127 | 0.303 | | 2.52E+09 | | 1,30E-04 | 15 | 18.363 | 1,25E-05 | 5.43E-04 | 75E-04 |
| | | 59.98 | 0,130 | D.659 | 1.625-08 | 0.390 | 6.33E-09 | 18.76 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | | | 15 | NA NA | 8.28E-01 | 3.56E+01 | 1.75E-04 |
| -Ca | C51-C52 Aromatics C5-C6 Alighands | 50.95 | 6.130 | 0,659 | 1.626-08 | D.350 | 6,33E-09 | 18,75 | 0.43 | 0.127 | Q.303 | 1.72E+04 | 2.52E+08 | 9.50E+06 | 1.30E-04 | 15 | | 3.50E-04 | 1.55E-02 | 1.75E-04 |
| +C10 | 00 040 Aug | 59.98 | 0.130 | 0,656 | 1,62E-08 | D.350 | 0.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52€+08 | | 1.30E-D4 | 15 | - W | | 1.55E-02 2.79E+01 | |
| | C9-C10 Aromatica | 59.95 | 0.130 | 0,659 | 1.62E-08 | 0,390 | 6.335-09 | 18,76 | 0.43 | 0.127 | 0.303 | | 2.525+06 | | | 15 | NA NA | 5.48E-01 3.99E-03 | | 1.75E-04 |
| C12 | C9-C12 Allphatics | 59.98 | 0 130 | 0.659 | 1.62E-08 | 0.300 | 5.335.09 | 18 76 | 0 43 | 0.127 | | | 2.52E+06 | | 1.30E-04 | 15 | NA NA | 3.00E-03 | 1,70E-01 | 1.75E-04 |

--

Appendix C.4
Johnson & Ettinoer Model - Calculations Screen
Inhulation of Volatiles from Groundwater
Futher Child Recreational Science's - RME
Southwest Prenties, Wale G&H Superfund Sile, Operable Unit 2
Whitney Barrel

| Control Cont | | | Vadose zons effective diffusion confficient, | Conidary zone effective diffusion conficient. | Total overali affective diffusion coefficient. | Otflusion path fenoth. | Convection path length. | Source vapor conc | Crack radius. | Average vapor flow rate mto bido | Creck effective diffusion coefficient. | Atom of crack, | Exponent of equivolent foundation Paciet number. | infinite source indoor attenuation coefficient, | Infinite eourça bidq conc | Unit risk factor, | Reference conc., |
|---|---------|--|---|---|--|------------------------------|-------------------------|-------------------------|---------------|---|---|----------------|--|---|------------------------------------|-------------------------|----------------------|
| Times | | | D" v | D" <u>.</u> | D** | | _ | | | C | Dames | | exp(Fe ⁱ) | | | URF | RIC |
| Prof. | | | (cm7e) | (cm*/e) | (cm /a) | (ain) | (071) | (μg/m [*]) | (cm) | (cm*/s) | (cm*/s) | (cm*) | (unitiess) | (unitiess) | (jug/m²) | (hrd/m1) | (mg/m ⁻) |
| Prof. | 71556 | 1.1.5-T nohicrosthane | 4.755-04 | 4.45E-04 | 4.655-04 | 59 GR | 15 | 1895-03 | 0.10 | 1 2 7/E404 I | 4.76E.04 | 1 275401 | 4365.104 | 7 925.06 | 1 ME.02 | N/A | T 2 2€+00 |
| Transfer | 78131 | Trictions-1.2.2-httlourgethane, 1.1.2- | | | | | | | | | | | | | | | 3 DE-01 |
| 1935 1.1-Octorosemen | 79005 | 1.1.2-Trichloroethane | | | | | | | | | | | | | | | 2.2E+00 |
| Total | 76343 | 1,1-Dichkroethere | | | | | | | | | | | | | | | 6.0E.01 |
| 12001 124-17cherobergers 2,756-04 2, | 75354 | 1,1-Dichlorgethylene | | | | | | | | | | | | | | | 2.0E-01 |
| | 120821 | 1,2,4-Trichlorobenzane | | | | | | | | | | | | | | | 2 0E-01 |
| SATESTIC Deterobations 1. 2.966-04 2.206-04 2.216-04 59.86 16 3.2866-07 0.10 7.186-07 4.366-04 1.216-07 4.086-04 4.206-04 | | 1,2-Dichlorobenzene | 1.56E-02 | | | | | | | | 1.56E-02 | | | | | | NVA |
| 100467 14-0chteoptopropers | 541731 | Dichlorobenzene, 1,3- | 2.58E-04 | | | | | | 0.10 | | | | | | | | N/A |
| Description | 108467 | 1.4-Dichlorobenzene | | | | | | | | | | | | | | | 8 DE-01 |
| EPPS Academie 2,075,00 2,095,03 2015,00 5018 15 10.04 10.10 2715,00 2715,00 2015,00 1055,0 | 76933 | | 9.45E-04 | | | | | | | | | | | | | | N/A |
| Triangle | 67641 | Acetone | 2.07E-03 | | | | | | | | | | | | | | N/A |
| T450 | 71432 | Benzene | | | | | | | | | | | | | | | 3 DE-02 |
| Tellon Certon Districts System | 74639 | Bromomethere | | | | | | | | | | | | | | | 5.0E-03 |
| 168607 Obscobargere | 76150 | Carbon Disuffide | | | | 59.98 | | | | | | | | | | | 7.0E-01 |
| Total Tota | 108907 | Chiorobenzene | | | | | | | | | | | | | | | 6.0E-02 |
| Chlorodom | 75003 | Ethyl Chlorida | | | | | | | | | | | | | | | 1.0E+01 |
| 155962 | 67663 | Chloroform | | | | | | | | | | | | | | | 5.0E-02 |
| 1106277 Openhastenee | 158552 | cis-1,2-Dichkroethylene | | | | | | | | | | | | | | | 2 0E-01 |
| 100414 Sprighensmane | 110627 | Cyclohexane | | | | | | | | | | | | 7 97E-06 | | | NN/A |
| 59826 September 3,955-04 3,755-04 3,875-04 59,86 15 | 100414 | Ethylbenzane | | | | | | | | | | | | | | | 1.0E+00 |
| 108202 | 98828 | (ecoropy/benzene | 3.95E-04 | 3.70E-04 | | | | | | | | | | | | | 4 DE-01 |
| 1534044 Mathylan Ethines 5.016.04 6.266.04 6.366.04 6. | 108872 | Methyl cyclohexarve | | | | | | | | | | | | | | | 3.0E+00 |
| 150525 | 1634044 | | | | | | | | | | | | | | | | 3.0E+00 |
| 127144 Temphrosethrine | 75092 | | | | | | | | | | | | | | | | 3.0E+00 |
| 108645 Toleres | 127184 | Tetrachioroethvierw | | | | | | | | | | | | | | | N/A |
| 15805 | | | | | | | | | | | | | | | | | 4 DE-01 |
| Post Inchicrostrians | 156605 | | | | | | | | | | | | | | | | 2.0E-01 |
| 150217 1 | 79016 | | | | | | | | | | | | | | | | 4 0E-02 |
| 130207 Names | 76014 | Vinvi chloride | | | | | | | | | | | | | | | 0E-01 |
| \$2,000.00 \$2,0 | 1330207 | Xylenes | | | | | | | | | | | | | | | 1.0E-01 |
| 61253 Healthinghery | 96662 | Acetochenone | | | | | | | | | | | | | | | N/A |
| \$19175 Methylaphthalane, 2: \$3,326-04 \$2,966-04 \$3,076-04 \$69.65 19 NA 0.10 2746-01 3186-04 1,226-05 BNUM: \$6,965.05 NA NA 3.076-04 \$9.65 19 NA 0.10 2746-01 3186-04 1,226-05 BNUM: \$6,965.05 NA NA 3.076-04 3.0 | 91203 | [Naphtralone | | | | | | | | | | | | | | | 3 0€ 03 |
| 92584 Spherm, 1,1- | 91575 | Methylnephotelene, 2- | | | | | | | | | | | | | | | 3.0E-03 |
| 208886 | 92524 | Blohanyl, 1.1'- | | | | | | | | | | 1 235-03 | | | | | N/A |
| E3325 | 208966 | Acunaphthylene | | | | | | | | | | | | | | | 3.0E-03 |
| | 53329 | | | | | | | | | | | | | | | | 3.0E-03 |
| Section Sect | 88737 | Fluorene | 8.16E-01 | 8.39E-01 | | | | | | | | | | | | | 3.0€-03 |
| 100127 Anthroposis 1,0016-03 1,001 | 86018 | Phenanthrane | | | | | | | | | | | | | | | 3.0€-03 |
| GP-C19 C9-C10 Allehande 3.04E-04 3.04E-04 3.04E-04 3.04E-04 4.05E-04 69.88 16 2.05E-08 0.10 2.78E-03 3.04E-05 80.88 16 2.05E-08 0.10 2.78E-03 3.04E-03 80.88 1.05E-03 80.88 1.05E-0 | | | | | | | | | | | | | | | | | 3.0E-03 |
| C011-C2Z C11-C2Z Aromatics 4.27E-04 4.05E-04 4.20E-04 52.00 15 NA 0.10 2.77E-01 4.27E-04 1.20E-03 #NUAH 7.70E-06 (NA NA 5.7.0E-06 C5-0.2.0E-0. | CP-C18 | | | | | | | | | | | | | | | | 2.0E-01 |
| CS-C8 CS-C8 Allegraters 2.64E-04 3.40E-04 3.65E-04 59.65 15 1.25E-07 0.10 2.71E-01 1.64E-04 1.23E-03 MNLM 7.12E-06 8.4E-01 NM 27.0E-010 CS-C10 CS-C10 Azerusides 3.60E-04 3.46E-04 3.60E-04 3.60 | | | | | | | | | | | | | | | | | 5.0E-02 |
| CS-C10 CS-C10 Aramatics 3.58F-04 3.48E-04 3.68F-04 56.98 16 NA 0.10 2.78E-01 3.58E-04 1.58E-03 MILAM 7.35E-05 NA NA NA S. | | | | | | | | | | | | | | | | | 2.0E-01 |
| | | | | | | | | | | | | | | | | | 5.0E-12 |
| C9-C12 G3-C12 Alphatics 3,64E-04 3,40E-04 3,55E-04 50 98 15 1.68E+06 0 10 2 78E+04 3,84E-04 1,23E+03 m\UM+ 7,32E-06 1,23E+01 N/A 2,0 | CP-C12 | C9-C12 Allohatica | 3,54€-04 | 3.40E-04 | 3.56E-04 | 52 98 | 15 | 1.50E+06 | 9.10 | 2.74E+01 | 3.64E-04 | | #NUM! | 7.32E-06 | 1.23E+01 | | 2.0E-01 |

Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volatiles from Groundwater
*uture Child Recreational Scenario - RME
puthwest Prperties, Wells G&H Superfund Site, Operable Unit 2 Vhitney Barrel

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Hazard quotient

incremental

risk from

| | | Indoor exposure groundwater conc., carcinogen (µg/L) | Indoor exposure groundwater conc., noncarcinogen (µg/L) | Risk-based indoor exposure groundwater conc., (µg/L) | Pure component water solubility, S (µg/L) | Final Indoor exposure groundwater conc. (µg/L) |
|--------------|---|--|--|---|---|---|
| .aere | 1,1,1-Trichloroethane | NA NA | NA NA | NA NA | 1,33E+06 | NA NA |
| 1556 6131 | Trichloro-1,2,2-triflouroethane, 1,1,2- | NA NA | NA NA | NA NA | 1.70E+05 | NA. |
| | | NA NA | NA AN | NA NA | 4.42E+06 | NA |
| 9005 | 1,1,2-Trichloroethane | NA NA | NA NA | NA NA | 5.06E+06 | NA. |
| 5343 | 1,1-Dichloroethane | NA NA | NA NA | NA NA | 2,25E+06 | NA |
| 5354 | 1,1-Dichloroethylene | NA NA | NA NA | NA NA | 3.00E+05 | NA |
| 120821 | 1,2,4-Trichlorobenzene | | NA NA | NA NA | 2.77E+07 | NA. |
| 5501 | 1,2-Dichlorobenzene | NA. | NA NA | NA NA | 6.88E+04 | NA. |
| 41731 | Dichlorobenzene, 1,3- | NA NA | | NA NA | 7.38E+04 | NA. |
| 106467 | 1,4-Dichlorobenzene | NA NA | NA NA | | 2.23E+08 | NA. |
| 8933 | Butanone, 2- (MEK) | NA NA | NA NA | NA NA | 1.00E+09 | NA NA |
| 7641 | Acetone | NA | NA NA | NA NA | 1.75E+06 | NA NA |
| 1432 | Benzene | NA NA | NA NA | NA NA | 1.52E+07 | NA NA |
| 4839 | Bromomethane | NA NA | NA NA | NA NA | 2.67E+06 | NA NA |
| 5150 | Carbon Disulfide | NA | NA NA | | 4.72E+05 | NA. |
| 108907 | Chlorobenzene | NA NA | NA NA | NA NA | 5.32E+06 | NA NA |
| 5003 | Ethyl Chloride | NA NA | NA NA | NA NA | 7.92E+06 | NA NA |
| 7663 | Chloroform | NA NA | NA | NA NA | 3.50E+06 | NA NA |
| 56592 | cis-1,2-Dichloroethylene | NA | NA NA | NA | 5.50E+04 | NA NA |
| 10827 | Cyclohexane | NA NA | NA | NA NA | 1.69E+05 | NA NA |
| 00414 | Ethylbenzene | NA NA | NA NA | NA NA | 5.60E+04 | NA NA |
| 8828 | Isopropylbenzene | NA | NA. | NA | | NA NA |
| 28872 | Methyl cyclohexane | NA NA | NA NA | NA | 1.40E+04 | NA NA |
| 634044 | Methyl-Tertiary-Butyl Ether | NA | NA NA | NA NA | 5.10E+07 | NA NA |
| 5092 | Methylene chloride | NA NA | NA NA | NA NA | 1.30E+07 | NA NA |
| 27184 | Tetrachloroethylene | NA NA | NA NA | NA NA | 2.00E+05 | NA NA |
| 108883 | Toluene | NA NA | NA NA | NA NA | 5.26E+05 | |
| 156605 | trans-1,2-Dichloroethylene | NA NA | NA NA | NA | 6.30E+06 | NA NA |
| 9016 | Trichloroethylene | NA NA | NA NA | NA NA | 1.10E+06 | NA |
| 5014 | Vinyl chloride | NA NA | NA NA | NA NA | 2.76E+06 | NA NA |
| 330207 | Xylenes | NA NA | NA_ | NA NA | 2.20E+05 | NA |
| 8862 | Acetophenone | NA NA | NA NA | . NA | 6.13E+06 | NA NA |
| 1203 | Naphthalene | NA NA | NA | NA. | 3.10E+04 | NA NA |
| 1576 | Methylnaphthalene, 2- | NA NA | NA . | NA NA | 2.46E+04 | |
| 92524 | Biphenyl, 1,1'- | NA NA | NA NA | NA. | 6.94E+03 | NA NA |
| 08968 | Acenaphthylene | NA NA | NA NA | NA NA | 3.93E+03 | |
| 3329 | Acenaphthene | NA NA | NA . | NA | 4.24E+03 | NA NA |
| 6737 | Fluorene | NA NA | NA NA | NA | 1.90E+03 | NA NA |
| 5018 | Phenanthrene | NA NA | NA. | NA. | 1.28E+03 | NA NA |
| 20127 | Anthracene | NA NA | NA | NA. | 4.34E+01 | NA NA |
| C9-C1B | C9-C18 Aliphatics | NA | NA NA | NA | 1,00E+04 | NA NA |
| C11-C22 | C11-C22 Aromatics | NA NA | NA NA | NA. | 5,80E+06 | NA NA |
| C5-C8 | C5-C8 Aliphatics | NA NA | NA | NA. | 1.10E+07 | NA NA |
| C9-C10 | C9-C10 Aromatics | NA NA | NA | NA NA | 5.10E+07 | NA |
| C9-C12 | C9-C12 Aliphatics | NA NA | NA NA | NA | 7.00E+04 | NA NA |

| vapor | from vapor |
|--------------|---------------|
| intrusion to | intrusion to |
| indoor air, | indoor air, |
| carcinogen | noncarcinogen |
| (unidess) | (unitiess) |
| *********** | |
| NA | 1.4E-07 |
| NA NA | NA |
| NA | NA NA |
| NA | 5.2E-06 |
| NA NA | NA_ |
| NA NA | . NA |
| NA NA | NA NA |
| | NA NA |
| NA NA | |
| NA | 1.6E-06 |
| NA NA | NA NA |
| NA_ | NA NA |
| 1.2E-09 | 6.1E-05 |
| NA NA | NA NA |
| NA NA | NA NA |
| NA NA | 3.5E-06 |
| NA | . NA |
| NA | NA |
| NA | 3.7E-05 |
| NA | NA NA |
| NA | 9.6E-07 |
| NA NA | NA NA |
| NA NA | NA NA |
| | 7.6E-07 |
| NA NA | |
| NA | NA NA |
| NA NA | NA |
| NA | 6.9E-05 |
| NA NA | 4.6E-06 |
| NA | 1.8E-06 |
| 4.5E-08 | 5.9E-04 |
| NA | NA . |
| NA . | . NA |
| NA | 3.7E-06 |
| NA | NA |
| NA | NA |
| NA | 1.8E-06 |
| NA | NA NA |
| NA | NA. |
| NA | 8,2E-07 |
| NA NA | NA. |
| NA NA | 1.7E-03 |
| NA NA | NA NA |
| | |
| NA NA | 1.0E-02 |
| NA. | NA 1 15 00 |
| NA NA | 1.4E-03 |

95% UCL 95% UCL Cancer Risk HI TOTAL: 5E-08 1E-02 = Cancer risk > 1E-05 or HQ/HI>1E+00

| Appendix C 4 | | | | | | | | | | | | | | | | | | | |
|----------------------|--|---------------------------|----------------|-----------------|----------------|--------------|-------------------|------------------|---------------|----------------|------------------|--------------|--|-----------------|--|------------------|------------|-----------|-----------|
| Johnson & Ettings | r Model - Data Entry Screen | | | | | | | | | | | | | | | | | | |
| inhalation of Votati | Kee from Groundwaler | | | | | | | | | | | | | | | | | | |
| Future Child Recre | adional Scenario - CT | | | | | | | | | | | | | | | | | | |
| Southwest Promis | es, Wells G&H Superfund Site. Operable | Link 2 | | | | | | | | | | | | | | | | | |
| Whitney Barrel | | | | ٠, | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| CALCULATE RIS | K-BASED GROUNDWATER CONCENT | "RATION (enter "X" is "Y" | ES*box) | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | YES | | | | | | | | | | | | | | | | | | |
| | OR | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| CALCULATE INC | REMENTAL RISKS FROM ACTUAL OR | CONCEI | NTRATION | | | | | | | | | | | | | | | | |
| (anter "X" in "YES" | box and initial groundwater conc. below) | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| ì | YES X | | ENTER | ENTER | ENTER | ENTER | | | | | | | | | | | | | |
| ì | —— ———— | | Death | rtu i Elv | ENTER | ENTER | | | | | | | | | | | | | |
| ENTER | | ENTER | below grade | | | | ENTER | ENTER | | | | | | | | | | | |
| ŀ | | 96% UCL | | | | Average | Vadose zone | User-defined | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | CNYED | ENTER |
| Chamica | | provindwater | to bottom | Depth | | act/ | SCS | VARIONA ZZOTA | Vadose zone | Vedose zone | Vadoes zone | Terget | Terpet hexard | Averaging | Averaging | | ru tru | ENIEN | ENTER |
| CAS No. | | | of enclosed | below crade | scs | o sonoweier | ecii type | eoil vanor | eall dry | eoli totel | ect water-filled | resis for | quotient for | time for | time for | Exposure | Броше | F | |
| | | conc | apaça ficor, | 10 water Lable. | noil type | temperature. | (used to actimate | OR permeability, | bulk density, | porceity, | porcetty. | carcincoens. | noncarcinogena, | cercinogene, | noncarcinogene, | duration. | frequency, | | Coversion |
| (numbers only, | | C _W | Lø. | LWT | directly above | ₹. | acil vapor | k. | ο, ν | n ^v | 4." | TR | THO | | | | | pump | factor. |
| no deshes) | Chemical | (µg/L) | (15 or 200 cm) | (cm) | water table | (°C) | permeability) | Note (cm²) | (p/cm³) | | | | | AT _C | AT _{NC} | ED | EF | ET | CF |
| | | | | 74-17 | 1174 1751 | 10/ | See (Leaders (A) | ricode (czn.) | (pvcm) | (unities s) | (cm³/cm³) | (unitiess) | (unitiess) | (yra) | (Y.0). | (970) | (deys/yr) | (hrs/day) | [hræ'yr) |
| 71656 | 1,1,1-Trichloroethene | 4.62E+00 | 15 | 74.98 | LS | 10 | | | | | | | | | | | | | |
| .75131 | Trichlorg-1.2.2-triflourgethene, 1,12- | | 15 | | | | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 7 2 | 26 | 2.5 | 8760 |
| 79005 | 1.1.2-Trichlorcethene | | | 74.90 | LS | 10 | LS | | 1.5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | † | · | 26 | 2.5 | 8760 |
| 75343 | 1.1-Dichloroethans | 2.54E+01 | 15 | 74.98 | ĻS | 10 | ĻS | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 | | | 26 | 2.5 | 8750 |
| 75354 | 1.1-Dichlor oethylene | 2.51E+V1 | 15 | 74.98 | L\$ | 10 | 4,5 | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | , , - | | 26 | 2.5 | 8760 |
| 120821 | 1.2.4-Trichlorobenzene | | | 74.98 | 1.5 | 10 | LS. | 1 | 15 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | 2 | 26 | 2.5 | 8760 |
| 95501 | 1,2-Dichlorobenzene | 7.43E+00 | 15 | 74.98 | 1.5 | 10 | | .1 | 15 | 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 | 2 | | 26 | 2.5 | 8760 |
| 641731 | Dichlorobenzene, 1.3- | 5.10E+00 | | 74 98 | s | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | | 26 | 2.5 | 8760 |
| 106467 | 1.4-Dichlorobenzene | 4.11E+01 | 15 | 74,98 | <u>LS</u> | 10 | LS. | 1 | 16 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | | 26 | 2.5 | 9760 |
| 78933 | Butanone, 2- (MEK) | 4.11E-VI | 15 | 74.98 | LS | 10 | L\$ | | 1.5 | 0.43 | 0.3 | 1,0€-08 | 1 | 70 | | | 26 | 2.5 | 8760 |
| 67641 | Acetone | | 15 | 74.98 | LŞ | 50 | LS. | 1 | 1.5 | 0.43 | 0,3 | 1.0E-08 | 1 1 | 70 | | | | 2.5 | 8760 |
| 71432 | Senzene | 2,13E+01 | 15 | 74 98 | LS | 10 | L.S | | 1.5 | 0 43 | 0.3 | 1 0E-08 | | 70 | | | 25 | 1 25 | 8760 |
| 74839 | Bromomethane | 2.135401 | 15 | 74 96 | LS | 10 | LS | 7 | 1.5 | 0.43 | 0.3 | 1 0E-08 | 1 | 70 | | + : | 26 | 25 | 8760 |
| 75150 | | | 15 | 74 98 | 1.5 | 10 | L8 | 1 - | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | + | | 75 | 8760 |
| 106907 | Carbon Dauffide Chlorobenzene | 1005.00 | 15 | 74.08 | LS | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.DE-04 | | 70 | | | 26 | 25 | 8760 |
| 75003 | Ethyl Chlorida | 4.90E+00 | 15 | 74.98 | La | 10 | LS | | 1.5 | 0.43 | 0,3 | 1.0E-00 | 1 | 70 | 3 | | 28 | 2.5 | 8760 |
| 67663 | Chlorotorm | | 15 | 74.98 | LS | 10 | LS | 1 | 1,5 | 0.43 | 0.0 | 1.0E-06 | 1 | 70 | | + | 26 | 25 | 8760 |
| 150592 | cse-1.2-Dichigroethylene | 9.74E+01 | 16 | 74,98 | LS_ | 10 | 1.9 | 1 | 1.5 | 0.43 | 0.3 | 1.0E-0d | 1 | 70 | | | 26 | 25 | 8760 |
| 110827 | Cyclohexane | A'second | 15 | 74,98 | LS | 10 | L8 | 7 | 1.5 | 0.43 | D.J | 1,0E-06 | 1 | 70 | | 2 | 26 | 25 | 8760 |
| 103414 | Ethylbenzene | 1.01E+01 | 16 16 | 74.98 | LS | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 | | | 25 | 25 | 8760 |
| 96525 | l scor opyfoen pane | 1.012701 | | 74.90 | ĻS | 10 | 20 | | 15 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | + | 26 | 2.5 | 8780 |
| 108872 | Methyl cycloheaune | | 16 | 74,98 | LS | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 1 1 | | 76 | 25 | 8760 |
| 1634044 | Methyl-Tertery Butyl Ether | 1 28E+02 | 15 | 74.99 | L5 | 10 | L5 | 1 1 | 1.5 | 0.43 | 0.3 | 1.05-06 | 1 | 70 | - ; · | | 70 | 2.5 | 8760 |
| 76092 | Methylene chloride | 625.05 | 15 16 | 74.00 | 15 | 10 | L5 | 1 | 1.5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | ; | | 26 | 25 | 8760 |
| 127184 | Yetrachloroethylene | | 16 | 74,98 | 1.8 | 10 | L\$ | | 1.5 | 0,43 | 0.3 | 1.0E-06 | 1 | 70 | † | 2 | 26 | 2.5 | 8750 |
| 198883 | Youene | 2.45E+02 | 15 | | LS | 10 | LS | | 1.5 | 0.43 | 0.3 | 1.0E-08 | 7 -1 | 70 | - | 2 | 24 | 2.5 | 57B0 |
| 156605 | trans-1.2-Dichloroethylane | 4.30E+00 | 15 | 74.98 | ĻŞ | 10 | ĹS. | 1 | 15 | 6.43 | 0.3 | 1.0E-06 | 1 | 70 | | | 28 | 2.5 | 8750 |
| 79016 | Trichlorooth dans | 2.00E+00 | | 74.98 | ĻS. | 10 | \$S | 1 | 15 | 0.43 | 0.3 | 1 0E-06 | 1 | 70 | | + | 26 | 26 | 8750 |
| 75014 | Vinyl chloride | 8,50E+01 | 15 15 | 74,98 74.98 | Ļ5 | 10 | ĻŞ. | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8765 |
| 1330207 | | 5,30(10) | 15 | 74.98 | LS | 10 | LS. | 1 | 1.5 | 0.43 | 0.3 | 1,05-06 | 1 | . 70 | | - ; | 26 | 2.5 | 8760 |
| 98882 | Acetophenone | | | | LS | 10 | L8 | 1 | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | | 26 | 2.5 | 8760 |
| 81203 | Naphthalene | 9.50E+00 | 15 15 | 74 98 | L8 | 10 | <u>L8</u> | | 1.6 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | | - | 26 | 2.5 | 8763 |
| 91576 | Methylpschibalens, 2- | #.005*00 | 15 | 74.98 | LS | 10 | l.s | 1 | 15 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | - 3 | | 25 | 2.5 | 8760 |
| 92524 | Biphenyl, 1,11- | | (5 | 74 98 | <u>LS</u> | 10 | ĻS | 1 | 15 | 0.43 | 0.3 | 1.05-06 | 1 | 70 | 7 | 1 2 | 26 | 2.5 | 8760 |
| 206968 | Acenaphilive | 3 20E+00 | | 74.98 | <u>L</u> S | 10 | LS. | 1 1 | 1.5 | 043 | 0.3 | 1,05-06 | 1 | 70 | *** | ···· | 26 | 2.5 | 8760 |
| 83329 | Acensohrhene | | 15 | 74.98 | <u>LS</u> | 10 | LS. | 1 7 | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | + | | 1 20 | 2.5 | 8760 |
| 86737 | Fluorene | | 15 | 74 98 | LS | 10 | L8 | 1 | 1.6 | 0 43 | 0.3 | 1.0E-06 | 1 1 | 70 | | * | 1 2 | 2.5 | 8760 |
| 85018 | Phenantirene | 3,10E+00 | 16 | 74 98 | LS | 10 | L8 | 1 1 | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 | | * * | 26 | 2.5 | 8750 |
| 120127 | Addressed | 3,105,400 | 15 15 | 74 98 | 1.8 | 10 | Lŝ | 1 | 1,5 | 0.43 | 0.3 | 1.0€-06 | 1 | 70 | | 2 | 26 | 2.5 | 8760 |
| C9-C18 | C9-C18 Aliphetics | 4.95E+01 | 15 | 74.98 | LS. | 10 | L3 | 1 | 1.5 | 0.43 | 0.3 | 1,0E-08 | i | 70 | 7 | 2 | 28 | 2.5 | 8760 |
| C11-C22 | C11-C22 Aromatics | 7,875-01 | 15 | 74,98 | LS | 10 | La | 1 | 1,5 | 0.43 | D.3 | 1.0E-06 | i | 70 | 3 | 2 | 26 | 2.5 | 8750 |
| C5-C8 | C6-C6 Allohatica | 1 64E+02 | 15 | 74.98 | L9 | 10 | LS | 1 | 15 | 0.43 | 0.3 | 1 0E-06 | i | 70 | | 1 5 | 26 | 2.5 | 8760 |
| C9-C10 | C9-C10 Aromatica | , 64E-A4 | 15 | 74.95 | ĻŞ | 10 | L3 | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | | 5 | 26 | 2.5 | 8760 |
| G9-C12 | C9-G12 Alloh sice | 2 67E+01 | | 74,95 | ĻS | 10 | LS . | • | 1.5 | 0.43 | 0.3 | 1 0E-06 | 1 1 | 70 | | † - 5 | 26 | 2.5 | 8760 |
| Pinta: | V/V 14 (57/1964 | 20/EPUI | 15 | 74.99 | | 16 | LS | 1 | 1.5 | 0,43 | 0.3 | 1.05.06 | † ; | 70 | | + | ¥ 20 | 4 50 | 0700 |

Note:
1) Default soil parameters from table 7 of User's Golde for Evaluating Subsportage Vapor Initiation into Building (U.S. EPA June 19, 2003) were used for soil water Sked porceity (B_m), acid organic carbon fraction (f_m), acid total porceity (n), and soil dry built density (p_s).

Appendix C.4
Johnson & Ettinger Model - Chemical Properties Screen
Inhalation of Volatiles from Groundwater
Future Child Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

| | | | | Henr√s | Henr√s | Enthalpy of | | | Organic | Pure | | |
|----------|-------------------------------------|----------------------|----------------|-------------------|--------------|-------------------|---------|----------------|----------------------|-------------|-----------------------|-----------|
| | | | | law constant | law constant | vaporization at | Normal | | carbon | component | Unit | |
| | | Diffusivity | Diffusivity | at reference | reference | the normal | boiling | Critical | partition | water | risk | Reference |
| | | in air. | in water. | temperature, | temperature, | boiling point, | point, | temperature, | coefficient, | solubility, | factor, | conc., |
| Chemical | | D, | D _w | н | TR | ΔH _{v.b} | TB | T _C | K₀c | S | URF | RfC |
| CAS No. | Chemical | (cm ² /s) | (cm²/s) | (atm-m³/mol) | (°Ĉ) | (cal/mol) | (°K) | (°K) | (cm ³ /g) | (mg/L) | (μg/m³) ⁻¹ | (mg/m³) |
| CAS NO. | Chemical | (01173) | (\$1113) | (edit-iti /itioi) | (0) | (Galifficity | (, , , | (11) | (5,1,79) | (///g/L) | (1-3) | |
| 71556 | 1.1.1-Trichloroethane | 7.80E-02 | 8.80E-06 | 1.72E-02 | 25 | 7,136 | 347.24 | 545.00 | 1.10E+02 | 1.33E+03 | N/A | 2.2E+00 |
| 76131 | Trichloro-1.2.2-triflouroethane, 1. | 2.88E-02 | 8.07E-06 | 5.17E-01 | 25 | 1,326 | 320.70 | 481,05 | 2.25E+02 | 1.70E+02 | N/A | 3.0E+01 |
| 79005 | 1,1,2-Trichloroethane | 7.80E-02 | 8.80E-06 | 9.12E-04 | 25 | 8.322 | 386.15 | 602.00 | 5.01E+01 | 4.42E+03 | 1.6E-05 | 2.2E+00 |
| 75343 | 1,1-Dichloroethane | 7.42E-02 | 1.05E-05 | 5.61E-03 | 25 | 6,895 | 330.55 | 523.00 | 3.16E+01 | 5.06E+03 | N/A | 5.0E-01 |
| 75354 | 1,1-Dichloroethylene | 9.00E-02 | 1.04E-05 | 2.61E-02 | 25 | 6,247 | 304.75 | 576.05 | 5.89E+01 | 2.25E+03 | N/A | 2.0E-01 |
| 120821 | 1,2,4-Trichlorobenzene | 3.00E-02 | 8.23E-06 | 1.42E-03 | 25 | 10,471 | 486.15 | 725.00 | 1.78E+03 | 3.00E+02 | N/A | 2.0E-01 |
| 95501 | 1.2-Dichlorobenzene | 6.88E-02 | 9.41E-06 | 1.62E-06 | 25 | 1,223 | 465.00 | 697.50 | 5.34E+01 | 2.77E+04 | N/A | N/A |
| 541731 | Dichlorobenzene, 1,3- | 4.14E-02 | 8.85E-06 | 4.70E-03 | 25 | 1,242 | 446.00 | 683,96 | 1,70E+02 | 6.88E+01 | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 6.90E-02 | 7.90E-06 | 2.43E-03 | 25 | 9,271 | 447.21 | 684.75 | 6.17E+02 | 7.38E+01 | N/A | 8.0E-01 |
| 78933 | Butanone, 2- (MEK) | 8.08E-02 | 9.80E-08 | 5.60E-05 | 25 | 1,311 | 352.50 | 528.75 | 3.83E+00 | 2.23E+05 | N/A | N/A |
| 67641 | Acetone | 1,24E-01 | 1.14E-05 | 3.88E-05 | 25 | 6,955 | 329.20 | 508.10 | 5.75E-01 | 1.00E+06 | N/A | N/A |
| 71432 | Benzene | 8.80E-02 | 9.80E-06 | 5.56E-03 | 25 | 7,342 | 353.24 | 562.16 | 5.89E+01 | 1.75E+03 | 7.8E-06 | 3.0E-02 |
| 74839 | Bromomethane | 7.28E-02 | 1.21E-05 | 6.22E-03 | 25 | 1,362 | 276.50 | 414,75 | 1.43E+01 | 1.52E+04 | N/A | 5.0E-03 |
| 75150 | Carbon Disulfide | 1.04E-01 | 1.29E-05 | 1.27E-02 | 25 | 6.391 | 319.00 | 552.00 | 5.14E+01 | 2.67E+03 | N/A | 7.0E-01 |
| 108907 | Chlorobenzene | 7.30E-02 | 8.70E-06 | 3.71E-03 | 25 | 8,410 | 404.87 | 632.40 | 2.19E+02 | 4,72E+02 | N/A | 6.0E-02 |
| 75003 | Ethyl Chloride | 1.26E-01 | 6.50E-06 | 8.67E-03 | 25 | 1,355 | 249.00 | 373.50 | 1.43E+01 | 5.32E+03 | N/A | 1.0E+01 |
| 67663 | Chloroform | 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 6,988 | 334.32 | 536.40 | 3.98E+01 | 7.92E+03 | 2.3E-05 | 5.0E-02 |
| 156592 | cis-1,2-Dichloroethylene | 7.36E-02 | 1.13E-05 | 4.07E-03 | 25 | 7,192 | 333.65 | 544.00 | 3.55E+01 | 3.50E+03 | N/A | 2.0E-01 |
| 110827 | Cyclohexane | 8.00E-02 | 9.00E-06 | 2.00E+00 | 25 | 1,309 | 353.85 | 530.78 | 1,60E+02 | 5.50E+01 | #N/A | #N/A |
| 100414 | Ethylbenzene | 7.50E-02 | 7.80E-06 | 7.88E-03 | 25 | 8,501 | 409.34 | 617.20 | 3.63E+02 | 1.69E+02 | N/A | 1.0E+00 |
| 98828 | Isopropylbenzene | 6.50E-02 | 7.83E-06 | 1.47E-02 | 25 | 1,259 | 425,40 | 631.01 | 9.31E+03 | 5.60E+01 | N/A | 4.0E-01 |
| 108872 | Methyl cyclohexane | 9.86E-02 | 8.52E-06 | 4.23E-01 | 25 | 1,296 | 373.90 | 560.85 | 2.68E+02 | 1.40E+01 | N/A | 3.0E+00 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1.02E-01 | 1.05E-05 | 5.87E-04 | 25 | 1,324 | 328.36 | 497.11 | 3.84E+01 | 5.10E+04 | N/A | 3.0E+00 |
| 75092 | Methylene chloride | 1.01E-01 | 1.17E-05 | 2.19E-03 | 25 | 6,706 | 313.00 | 510.00 | 1.17E+01 | 1.30E+04 | 4.7E-07 | 3.0E+00 |
| 127184 | Tetrachloroethylene | 7.20E-02 | 8.20E-06 | 1.84E-02 | 25 | 8,288 | 394,40 | 620.20 | 1.55E+02 | 2.00E+02 | 5.9E-06 | N/A |
| 108883 | Toluene | 8.70E-02 | 8.60E-06 | 6.63E-03 | 25 | 7,930 | 383.78 | 591.79 | 1.82E+02 | 5.26E+02 | N/A | 4.0E-01 |
| 156605 | trans-1,2-Dichloroethylene | 7.07E-02 | 1.19E-05 | 9.39E-03 | 25 | 1,333 | 320.85 | 516.50 | 5.25E+01 | 6,30E+03 | N/A | 2.0E-01 |
| 79016 | Trichloroethylene | 7.90E-02 | 9.10E-08 | 1.03E-02 | 25 | 7,505 | 360.36 | 544.20 | 1.66E+02 | 1.10E+03 | N/A | 4.0E-02 |
| 75014 | Vinyl chioride | 1.06E-01 | 1,23E-05 | 2,71E-02 | 25 | 5,250 | 259.25 | 432.00 | 1.86E+01 | 2.76E+03 | 8.8E-06 | 1.0E-01 |
| 1330207 | Xylenes | 7.69E-02 | 8.44E-06 | 6.73E-06 | 25 | 1,264 | 417.40 | 616.21 | 2.41E+02 | 2.20E+02 | N/A | 1.0E-01 |
| 98862 | Acetophenone | 6.00E-02 | 8.73E-06 | 1.02E-05 | 25 | 1,214 | 475.00 | 712.50 | 4.62E+01 | 6.13E+03 | N/A | N/A |
| 91203 | Naphthalene | 5.90E-02 | 7.50E-06 | 4.83E-04 | 25 | 10,373 | 491.14 | 748.40 | 2.00E+03 | 3.10E+01 | N/A | 3.0E-03 |
| 91576 | Methylnaphthalene, 2- | 4.84E-02 | 7.75E-06 | 1,01E-03 | 25 | 1,169 | 514.05 | 761.01 | 8.51E+03 | 2.46E+01 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 4.04E-02 | 8.15E-06 | 3.03E-04 | 25 | 1,149 | 529.10 | 793.65 | 6.25E+03 | 6.94E+00 | N/A | N/A |
| 208968 | Acenaphthylene | 4.43E-02 | 7.44E-06 | 2.80E-04 | 25 | 1,118 | 553.00 | 792.01 | 4.79E+03 | 3,93E+00 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 4.21E-02 | 7.69E-06 | 1.55E-04 | 25 | 12,155 | 550.54 | 803.15 | 7.08E+03 | 4.24E+00 | N/A | 3.0E-03 |
| 86737 | Fluorene | 3.63E-02 | 7.88E-06 | 9.41E-08 | 25 | 12,666 | 570,44 | 870.00 | 7.71E+03 | 1.90E+00 | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 3.30E-02 | 7.47E-06 | 1.30E-04 | 25 | 1,057 | 613.00 | 869.01 | 1.41E+04 | 1.28E+00 | N/A | 3.0E-03 |
| 120127 | Anthracene | 3.24E-02 | 7.74E-06 | 6.51E-05 | 25 | 13,121 | 615.18 | 873.00 | 2.95E+04 | 4.34E-02 | N/A | 3.0E-03 |
| C9-C18 | C9-C18 Aliphatics | 6.00E-02 | 1.00E-05 | 1.66E+00 | 25 | NA | NA | NA | 6.80E+05 | 1.00E+01 | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 6.00E-02 | 1.00E-05 | 7.32E-04 | 25 | NA | NA | NA | 5.00E+03 | 5,80E+03 | N/A | 5.0E-02 |
| C5-C8 | C5-C8 Aliphatics | 6.00E-02 | 1.00E-05 | 1.30E+00 | 25 | NA . | NA | NA | 2.27E+03 | 1.10E+04 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 6.00E-02 | 1.00E-05 | 7.92E-03 | 25 | NA NA | NA. | NA. | 1.78E+03 | 5.10E+04 | N/A | 5.0E-02 |
| C9-C12 | C9-C12 Aliphatics | 6.00E-02 | 1.00E-05 | 1.56E+00 | 25 | NA | NA | NA | 1.50E+05 | 7.00E+01 | N/A | 2.0E-01 |

Appendix C.4
Johnson & Ethinger Model - Celosations Screen
Inhelelion of Volelibler from Groundwater
Future Chief Recreational Scenario - CT
Southwest Prparties, Welle G&H Superfund Ste, Operable Unit 2
Wildraw Earnal

| | Southwest Prparties, Welle G&H Superfund Ste, Whitney Samel | Operable Unit 2 | | | | | | | | | | | • | | | | | | |
|-----------------|---|------------------------------------|--|--|--|---|--|------------------------------|---|---------------------------------|--|------------------------------------|-------------------------------|---|--------------------------------------|-----------------------------------|--|--|--------------|
| | | Source- building seceration, | Variose zone soil eir-filled porcelify, | Vadose zone effective lotal fluid seturation, | Vadose zone soli intrinsic permesbliky, | Vadote zone soli relative sk permeability, | Vacione zone soli effective vapor permechility, | Thickness of capillary zone, | Yolaf porcenty in capitary zone, | Air-filled porceity in cooldary | Water-filed porosity in capitary zone. | Ficor- wal seem permeter. | Bidg. vantilation rate, | Area of enclosed space below grade. | Crack- to-lotal area natio, | Creck depth below grade, | Enthalpy of vaportzation of ave. proundwater temperature, | Henry's law constant at ave. groundwater | |
| | | Lŧ | θ, | 8. | 4, | k, | k | L_ | ٠. | θ | A _{wer} | Xerack | | | | | | lemperature. | temperature, |
| | | (cm) | (cm²/cm²) | (cm³/cm³) | (cm²) | (cm²) | [cm²] | (cm) | (cm³/cm³) | (cm³/cm³) | (cm²/cm²) | (cm) | (cm²/s) | A _a | 11 | Zone | ΔH _{e-1} | Hre | H*TE |
| 71556 | | | | | | | | 1-11-1 | , | (destroyer) | 15117517 | (CID) | (GH /II) | (cm²) | (unitiess) | (cm) | (cal/mol) | (etm-m²/mai) | (unitiess) |
| 76131 | 1,1,1-Trichlomethene | 59.98 | 0.130 | 0.659 | 1.62E-G8 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1 72E+04 | | | 1 112 | | | | |
| 79005 | Trichlaro-1,2,2-friflourcethane, 1,1,2- | 59.98 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1,72E+04 | | 9.50E+06 | 1.30E-04 | 15 | 7,885 | 8.50E-03 | 3.66E-01 |
| 75343 | 1,1,2-Trichloroethane | 59 98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,436 | 4 55E-01 | 1.96E+01 |
| 75354 | 1,1-Dichlor cethane | 59.98 | 0.130 | 0 659 | 1,62E-08 | 0.390 | 6.33E-09 | 10.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+05 | 1.30E-04 | 15 | 9,572 | 3.88E-04 | 1.67E-02 |
| 120821 | 1,1-Dichloroethylane | 59.98 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 2.52E+06 | 9.50E+06 | 1,30E-04 | 15 | 7,450 | 2.88E-03 | 1.24E-01 |
| 95501 | 1,2.4-Trichicrobenzene | 59.98 | 0.130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | | 9.50E+06 | 1.30E-04 | 15 | 6,392 | 1.47E-02 | 6 34E-01 |
| 955U1 541731 | 1,2 Dichlorobenzene | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6 33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 13,230 | 4.35E-04 | 1.87E-02 |
| 106467 | Dichlorobenzene, 1,3- | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1 72E+04 | 2.52E+06 | 9.50E+06 | 1 30E-04 | 15 | 1,521 | 1 41E-06 | 6 09E-05 |
| 78933 | 1,4-Dichlorobenzene | 59,98 | 0 130 | 0,659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2 52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,503 | 4 11E-03 | 1 77E-01 |
| | Butanone, 2- (MEK) | 59.98 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | 9.50E+06 | 1 30E-04 | 15 | 11,243 | 8 69E-04 | 3 83E-02 |
| 67641 71432 | Acetone | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 1.72E+04 | 2 52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,486 | 4 90E-05 | 2.11E-03 |
| | Benzene | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 7,559 | 1 97E-05 | 8.50€-04 |
| 74839 75150 | Bromometrane | 59.98 | D.13Q | 0.639 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | | 1.72E+04 | 2 52E+08 | 9.50E+06 | 1.30E-04 | 15 | 6,122 | 2.69E-03 | 1,16E-01 |
| | Carbon Dlauffide | 59.96 | 0.130 | 0,659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,337 | 5.52E-03 | 2.38E-01 |
| 108907 | Chlorobenzene | 59.90 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | . 15 | 6,682 | 6.99E-03 | 3.01E-01 |
| 75003 | Elhyl Chlorida | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18 75 | 043 | | 0.303 | 1.72E+04 | 2.52E+08 | 9.50E+06 | 1.30E-04 | 15 | 9,603 | 1.54E-03 | 6,65E-02 |
| 67663 | Chloroform | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18 75 | 043 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,201 | 7.79E-03 | 3.35E-01 |
| 156592 | cls-1,2-Dichloroethylene | 59.96 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 7.554 | 1.86E-03 | 5.02E-02 |
| 110827 | Cyclohexene | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1,30E-04 | 15 | 7,734 | 2.04E-03 | 8.77E-02 |
| 100414 | Ethylbenzene | 59.98 | 0.130 | 0.659 | 1 62E-08 | 0.390 | 6 33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,486 | 1.75E+00 | 7.54E+01 |
| 98828 | Isopropylbenzene | 59.98 | 0.130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 18.75 | | 0.127 | 0.303 | | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 10,155 | 3,18E-03 | 1.37E-01 |
| 108872 | Methyl cyclohecene | 59,98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,540 | 1.26E-02 | 5.51E-01 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 59,98 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,505 | 3.70E-01 | 1.59E+01 |
| 75092 | Methylene chloride | 59.98 | 0 130 | 0.659 | 1.52E-08 | 0.390 | 6.33E-09 | | 0.43 | 0.127 | 0.303 | 1 72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1.447 | 5.16E-04 | 2.22E-02 |
| 127184 | Tetrachiomethylene | 59,98 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1 72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 7,034 | 1.17E-03 | 5 03E-02 |
| 108683 | Toluene | 59.98 | D. 130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | | 0.43 | 0.127 | 0.363 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 9,553 | 7.63E-03 | 3.37€-01 |
| 156605 | trans-1,2-Dichicroethylene | 59.98 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0,303 | 1.72E+04 | 2 52E+06 | 9.50E+06 | 1.306-04 | 15 | 9,154 | 2 92E-03 | 1.26E-01 |
| 79016 | Trichloroethylene | 59 98 | 0.130 | 0.659 | 1,62E-08 | 0.390 | | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1 30E-04 | 15 | 1.417 | 8.27E-03 | 3 56E-01 |
| 75014 | Vinyl chlorise | 59.95 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+08 | 1.30E-04 | 15 | 8.557 | 4.79E-03 | 2 06E-01 |
| 1330207 | Xylense | 59.98 | 0.130 | 0.659 | 1.52E-03 | 0,390 | 6.33E-09 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+05 | 1.30E-04 | 15 | 5,000 | 1 73E-02 | 7.46E-01 |
| 98862 | Acetophenone | 69.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | | 18.75 | 0.43 | 0.127 | 0 303 | | 2.52E+06 | 9.50E+06 | 1 30E-04 | 15 | 1,542 | 5 66F-06 | 2.52E-04 |
| 91203 | Naphthalene | 59.98 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0 303 | _1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 1,518 | 8 91E-06 | 3.83E-04 |
| 91576 | Mathylnaphtholene, 2- | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18 75 | 0,43 | 0.127 | 0,303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1 30E-04 | 15 | 12,913 | 1.52E-04 | 6.55E-03 |
| 92524 | Biphenyl, 1,1' | 59.96 | 0.130 | 0.653 | 1.62E-08 | | 6.33E-09 | 18 75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2,52E+08 | 9.50E+08 | 1.30E-04 | 15 | 1.506 | 8.86E-04 | 3.81E-02 |
| 705965 | Aconophthylene | 59.96 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+08 | 9.50E+06 | 1.30E-04 | 15 | 1,472 | 2.66E-04 | 1.14E-02 |
| 53329 | Acurephiliane | 59.98 | 0.130 | 0.659 | 1.62E-08 | | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50£+06 | 1.30E-04 | 15 | 1,513 | 2.45E-04 | 1,05E-02 |
| 66737 | Fluorene | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6 335-09 | 16,75 | 0.43 | 0.127 | 0.303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 16,123 | 3.67E-05 | 1.58E-03 |
| 85018 | Phenentivane | 59.98 | 0.130 | 0.669 | 1.62E-08 | 0.390 | 6 33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 1,72E+04 | 2 52E+06 | 9.50E+06 | 1.30E-04 | 15 | 15,235 | 2.20E-08 | 9.48E-07 |
| 120127 | Anthracene | 59.85 | 0 130 | 0.659 | | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0,303 | 1.72E+04 | 2.52E+06 | 9.50E+06 | 1 30E-04 | 15 | 1 479 | 1.14E-04 | 4.90E-03 |
| C9-C18 | C9-C18 Alighetics | 59.98 | 0.130 | | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0 127 | 0.303 | 1.72E+04 | 2,52E+06 | 9.50E+06 | 1.30E-04 | 15 | 18,353 | 1.25E-05 | |
| C11-C22 | C11-C22 Aromatics | 59.98 | 0.130 | 0.559 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0 127 | 0.303 | | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | 10,333 NA | | 5 43E-04 |
| C5-C8 | C5-C8 Aliphatics | 59,98 | | 0.659 | 1.62E-08 | 0.350 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | 9.50E+06 | 1.30E-04 | 15 | NA NA | 8.28E-01 | 3.56E+01 |
| C9-C10 | C9-C10 Aremetics | 59.98 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6 33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | | 2 52E+06 | 9.50E+06 | 1.30E-04 | 15 | NA NA | 3.50E-04 | 1,55E-02 |
| C9-C12 | C9-C12 Aliphatics | | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 2.52E+06 | 9.50E+06 | 1.30E-04 | | | 6.48E-01 | 2.79E+01 |
| | The area with torons | 53 98 | 0,130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 172E+04 | - JEE TO 1 | V.00E*00 | 1.30 = 04 | 15 | Í NA | 3.96E-03 | 1.70E-01 |

(

Appendix C.A.
Johnson & Etinger Model - Celodations Screen
Inhalation of Volatiles from Groundwater
Future Child Recreational Screening - CT
Southwest Properties, Wells G&H Superfund Site, Oper.
Whitney (Samil

| | | Vapor viscosity at sive, soil temperature, | Visitions zone effective diffusion coefficient, | Ceptiery zone effective diffusion coefficient, | Total overali effective diffusion conflicient, | Datfusion path sangth, | Convection path length, | Source yapor conc., | Creck redius. | Average vapor flow rate into bidg., | Crack effective diffusion coefficient, | Area of creak, | Exponent of equivalent foundation Peolet number, | Infinite source indoor attenuation coefficient, | infinite source bidg. conc., | Unit risk Inctor, | Reference conc., |
|----------------|---|---|--|--|--|------------------------------|-------------------------------|---------------------------|------------------|--|---|-------------------|--|---|---------------------------------------|-------------------------|---------------------|
| | | jê ray | D ^{art} , | D. | o**, | t, | L, | Course | Format | سه | D _{orte} | A | exp(Pe ^r) | α | Canada | URF | RIC |
| | | (g/cm-s) | (cm²/s) | (om ² /s) | (cm³/e) | (cm) | (em) | (µg/m³} | (om) | (cm²/s) | (cm²/s) | (cm²) | (unitiess) | (unitiess) | (µg/m³) | (µp/m²)-1 | (mg/m³) |
| | | | | | | | | | | | | | | | | | |
| 71556 | 1,1,1-Trichloroethane | 1.75E-04 | 4.75E-04 | 4.45E-04 | 4.65E-04 | 59.96 | 15 | 1.59E+03 | 0.10 | 2.74E+01 | 4.75E-04 | 1,23E+03 | 4.36E+304 | 7.92E-06 | 1.34E-02 | N/A | 2.2E+00 |
| 76131 | Trichloro-1,2,2-irtilourcethane, 1,1,2- | 1.75E-04 | 1.75E-04 | 1.63E-04 | 1.71E-04 | 59,98 | 15 | N/A | 0,10 | 2.74E+01 | 75E-04 | 1.23E+03 | #NUM! | 5.40E-08 | NA | N/A | 3.0E+01 |
| 79005 | 1,1,2-Trichloroethane | 1.75E-04 | 5.24E-04 | 4.95E-04 | 5.15E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 6.24E-04 | 1.Z3E,+03 | 8.568+275 | 8.14E-05 | N/A | 1.5E-05 | 2.2E+00 |
| 75343 75354 | 1,1-Dichloroethene | 1,75E-04 | 4.58E-04 | 4.29E-04 | 4.49E-04 | 59,98 | 15 | 3.15E+03 | 0.10 | 2.74E+01 | 4.58E-04 | 1.23E+03 | PNUMI | 7.84E-06 | 2.47E-02 | N/A | 5.0E-01 |
| | 1,1-Dichicrostrylene | 1.75E-04 | 5,47E-04 | 5.12E-04 | 5.36E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 5.47E-04 | 1.23E+03 | 3.62E+264 | 8.22E-06 | N/A | N/A | 2.0E-01 |
| 120821 | 1,2,4-Triphiorobenzene | 1.75E-04 | 2.25E-04 | 2.14E-04 | 2.22E-04 | 59,9B | 15 | N/A | 0.10 | 2.74E+01 | 2.25E-04 | 1,23E+03 | MNUM | 6.10E-06 | N/A | N/A | 2,0E-01 |
| 95501 | 1,2-Dichlorobenzene | 1,75E-04 | 1.58E-02 | 1.60E-02 | 1.57E-02 | 59,98 | . 15 | 4.52E-01 | 0.10 | 2.74E+01 | 1.56E-02 | 1.23E+03 | 1.91E+09 | 1.08E-05 | 4.86E-08 | N/A | N/A |
| 541731 | Dichlorobenzene, 1,3- | 1.75E-04 | 2.58E-04 | 2.40E-04 | 2.51E-04 | 59.98 | 15 | 9.02E+02 | 0.10 | 2.74E+01 | 2.56E-04 | 1.23E+03 | MANNI | 6.43E-06 | 5,60E-03 | N/A | N/A |
| 106487 | 1,4-Dichlorobenzene | 1.75E-04 | 4.38E-04 | 4.12E-04 | 4.30E-04 | 59,98 | 15 | 1.57E+03 | 0.10 | 2.74E+01 | 4.38E-04 | 1.23E+03 | INUMI | 7.75E-06 | 1.22E-02 | N/A | 8.0E-01 |
| 75933 67641 | Butanone, 2- (MEK) | 1.75E-04 | 9.45E-04 | 9.27E-04 | 9.40E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 9.45E-04 | 1,23E+03 | 1.18E+153 | 9.18E-06 | N/A | N/A | N/A |
| 71432 | Acelone | 1,75E-04 | 2.07E-03 | 2.06E-03 | 2.07E-03 | 59,98 | 15 | N/A | 0.10 | 2.74E+01 | 2.07E-03 | 1,23E+03 | 9.18E+69 | 1.00E-05 | N/A | I N/A | N/A |
| | Benzene | 1.75E-04 | 5.42E-04 | 5.07E-04 | 5.30E-04 | 59,58 | 15 | 2.46E+03 | 0.10 | 2.74E+01 | 5.42E-04 | 1.23E+03 | | 6.20E-06 | 2.02E-02 | 7.8E-05 | 3.0E-02 |
| 74839 75150 | Bromomethene | 1.75E-04 | 4.46E-DI | 4.18E-04 | 4,37E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 4.46E-04 | 1.23E+03 | MNUM | 7.79E-06 | N/A | N/A | 5.0E-03 |
| 108907 | Carbon Disutide | 1.75E-04 | 6.34E-04 | 5.94E-04 | 6.21E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 6.34E-04 | 1,23E+03 | | 6.50E-06 | N/A | N/A | 7.0E-01 |
| 75003 | Chlorobenzene Ethyl Chlorobe | 1.75E-04 | 4.55E-04 | 4.27E-04 | 4.48E-04 | 59.98 | 15 | 3.26E+02 | 0.10 | 2.74E+01 | 4.55E-04 | 1,23E+03 | MUMF | 7.83E-06 | 2.55E-03 | N/A | 6.0E-02 |
| 67663 | Chloroform | 1.75E-04 | 7.66E-04 | 7.16E-04 | 7.49E-04 | 59,98 | 15 | N/A | 0,10 | 2.74E+01 | 7,65E-04 | 1.23E+03 | | 8.63E-06 | N/A | N/A | 1.0E+01 |
| 158592 | cle-1,2-Dichigrosthylene | 1.75E-04 | 8.43E-04 | 5.02E-04 | 6.29E-04 | 59,98 | 15 | N/A | 0.10 | 2.74E+01 | 6.43E-04 | 1.23E+03 | | 8.53E-06 | N/A | Z.3E-05 | 5.0E-02 |
| 110827 | | 1.75E-04 | 4.69E-04 | 4.30E-04 | 4,49E-04 | 59,96 | 15 | 8.54E+03 | 0.10 | 2.746+01 | 4.59E-04 | 1,23E+03 | MUM | 7.85E-06 | 6.71E-02 | N/A | 2.0E-01 |
| 100414 | Cyclohecane | 1,75E-04 | 4.85E-04 | 4.53E-04 | 4.75E-04 | 59.98 | 15 | N/A | Q.†Q | 2.74E+01 | 4.85E-04 | 1.23E+03 | | 7.97E-06 | N/A | #N/A | MVA |
| 98828 | Ethylbenzene | 1.75E-04 | 4.60€-04 | 4.31E-04 | 4.51E-04 | 59.98 | 15 | 1.38E+03 | 0.10 | 2.74E+01 | 4.60E-04 | 1.23E+03 | #NUM! | 7.85E-06 | 1.09E-02 | N/A | 1.0E+00 |
| 108872 | Isopropybenzene | 1.75E-04 | 3.95E-04 | 3.70E-04 | 3.67E-04 | 59.98 | 15 | N/A | 0.10 | 2,74E+01 | 3.95E-04 | 1.23E+03 | MUM | 7,51E-06 | N/A | N/A | 4.0E-01 |
| 1634044 | Methyl cyclohexene | 1.75E-04 | 5.96E-04 | 5.59E-04 | 5.85E-04 | 59.95 | 15 | N/A | 0.10 | 2.74E+01 | 5.98E-04 | 1.23E+03 | | 5.39E-06 | N/A | N/A | 3.0E+00 |
| 75092 | Methyl-Yertary-Bulyl Ether | 1.75E-04 | 6.67E-04 | 6,28E-04 | 6.54E-04 | 56.96 | 15 | 2.84E+03 | 0.10 | 2.74E+01 | 6.67E-04 | 1,23E+03 | | 8.60E-06 | 2.44E-02 | N/A | 3.0E+00 |
| 1271B4 | Methylene chloride | 1.75E-04 | 6.35E-04 | 5.96E-04 | 6.228-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 6.35E-04 | 1.23E+03 | | 8.51E-06 | N/A | 4.7E-07 | 3.0E+00 |
| 108883 | Tetrachlorosthylene Toluene | 1.75E-04 | 4.39E-04 | 4.11E-04 | 4.30E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 4.39E-04 | J.23E+03 | WUM | 7.75E-06 | N/A | 5.9E-06 | |
| 156605 | | 1.75E-04 | 5.34E-04 | 5.00E-04 | 5.23E-04 | 59.95 | | 3.00E+04 | 0.10 | 2.74E+01 | 5.34E-04 | 1.23E+03 | 1.10E+271 | 8.17E-06 | Z.5ZE-01 | N/A | 4 0E-01 |
| 79016 | trans-1,2-Dichlorostrylene | 1.75E-04 | 4,32E-04 | 4.04E-04 | 4.23£-04 | 59.98 | 15 | 1 53E+03 | 0.10 | 2.74E+01 | 4.32E-04 | 1.23E+03 | MUM | 7.71E-08 | 1,186-02 | N/A | 2.0E-01 |
| 75014 | Trichlarcethylene Vmvl chloride | 1.75E-04 | 4.63E-04 | 4.52E-04 | 1.73E-04 | 59.88 | 15 | 4.13E+02 | 0.10 | 2.74E+01 | 4.83E-04 | 1.23E+03 | | 7.96E-06 | 3.25E-03 | N/A | 4.0E-02 |
| 1330207 | Xvienes | 1.75E-04 | 6.44E-04 | 6.02E-04 | 6.30€-04 | 59,98 | 15 | 6,34E+04 | 0.10 | 2.74E+01 | 6.44E-04 | 1.23E+03 | | 8.53E-06 | 5.41E-01 | 8.8E-06 | |
| 98862 | Acelophenone | 1.75E-04 | 3.75E-03 | 3.81E-03 | 3.77E-03 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 3.75E-03 | 1,23E+03 | | 1.04E-05 | N/A | N/A | 1.0E-01 |
| 91203 | Nachthelene | 1,75E-04 | 2.60E-03 | 2.64E-03 | 2.61E-03 | 59.98 | 15 | N/A | 0 10 | 2,74E+01 | 2.60E-03 | 1.23E+03 | | 1.02E-05 | N/A | N/A | N/A |
| 91676 | Metrylnaphthalens, 2- | 1.75E-04 1.75E-04 | 4.70E-04 | 4.50E-04 | 4.645-04 | 59.98 | 15 | 6.29E+01 | 0.10 | 2.74E+01 | 4.70E-04 | 1.Z3E+03 | | 7.92E-06 | 4.98E-04 | N/A | 3.0E-03 |
| 2524 | Siphenyl, 1,31- | | 3.13E-04 | 2.95E-04 | 3.07E-04 | 58,98 | 15 | N/A | 0.10 | 274E+01 | 3,13E-04 | 1.23E+03 | MUM | 6.95E-06 | N/A | N/A | 3.0E-03 |
| 20896B | | 1.75E-04 | 3.15E-04 | 3,01E-04 | 3.10E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 3,15E-04 | 1,23E+03 | #NUM | 6.98E-06 | N/A | N/A | N/A |
| 33329 | Acenaphitylene Acenaphitylene | 1.75E-04 1.75E-04 | 3.38E-04 | 3.22E-04 | 3.33E-04 | 59.96 | 15 | 3.37E+01 | 0.10 | 2.74E+01 | 3.38E-04 | 1.23E+03 | #NUM: | 7.15E-06 | 2.41E-04 | N/A | 3.05-03 |
| 6737 | Ruorene | | 7.33E-04 | 7.31E-04 | 7.338-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 7.33E-04 | 1.23E+03 | | 8.79E-06 | N/A | N/A | 3 0E-03 |
| 95018 | Pheruntyene | 1,75E-04 | 8.16E-01 | 5.39E-01 | 8.235-01 | 59.98 | 15 | NA | 0.10 | 2.74E+01 | 5.16E-01 | 1.236+03 | | 3.24E-05 | N/A | N/A | 3.0E-03 |
| 120127 | Anityaçana | 1,75E-04 1,75E-04 | 3.50E-04 | 3.41E-04 | 3.47E-04 | 59,98 | 15 | 1.52E+01 | 0.10 | 2.74E+01 | 3.50E-04 | 1.23E+03 | #NUM? | 7.25E-06 | 1.10E-04 | N/A | 3.0E-03 |
| C9-C18 | C9-C16 Alphatics | 1.756-04 1.756-04 | 1.60E-03 3.64E-04 | 1.62E-03 | 1.60E-03 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 1.60E-03 | 1.23E+03 | | 9,81E-06 | N/A | N/A | 3.0E-03 |
| C11-C22 | C11-C22 Aromatics | 1.75E-04 1.75E-04 | | 3.40E-04 | 3,56€-04 | 59.94 | 15 | 1.78E+06 | 0.10 | 2.74E+01 | 3.64E-04 | 1.23E+03 | #NUMI | 7.32E-06 | 1.29E+01 | N/A | 2.0E-01 |
| 25-C8 | | | 4.27E-04 | 4.05E-04 | 4.20E-04 | 59.58 | 15 | N/A | 0.10 | 2.74E+01 | 4,27E-04 | 1.23E+03 | | 7.70E-06 | N/A | N/A | 5.0E-02 |
| 29-C10 | C5-C8 Aliphatics C9-C10 Arcmatics | 1.75E-04 | 3.64E-04 | 3.40E-04 | 3.56E-04 | 59 98 | 15 | 4.58E+08 | 0.10 | 2.74E+01 | 3.64E-04 | 1.23E+03 | | 7.326-06 | 3.35E+01 | N/A | 2.0E-01 |
| C9-C12 | | 1.75E-04 | 3.69E-04 | 3.46E-04 | 3.52E-04 | 59.98 | 15 | N/A | 0.10 | 2.74E+01 | 3,69E-04 | 1.Z3E+03 | WILH | 7.355-06 | N/A | N/A | 5,0€-02 |
| W-0+2 | C9-C12 Aliphatics | 1.75E-04 | 3.64E-04 | 3.40E-04 | 3.55E-04 | 59.98 | 15 | 6.95E+05 | 0.10 | 2.74E+01 | 3.64E-04 | 1 23E+03 | #NUM | 7.32E-06 | 6.55E+00 | N/A | 2.0E-01 |

Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volaliles from Groundwater
Future Child Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Whitney Barrel

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

| | | Indoor | Indoor | Risk-based | Pure | Final | | emental k from | Hazard quotient |
|---------|---|----------------------|-------------------------|-----------------------|------------------|-----------------------|---------------------------------------|--------------------|------------------------------|
| | | exposure | exposure | indoor | component | indoor | V | apor | from vapor |
| | | groundwater | groundwater | exposure | water | exposure | | usion to | intrusion to |
| | | conc., carcinogen | conc., noncarcinogen | groundwater conc., | solubility, S | groundwater conc., | | oor air. Snogen | indoor air, noncarcinogen |
| | | (μg/L) | (μg/L) | (μ g/L) | (µg/L) | (μg/L) | | ittess) | (unitless) |
| 71556 | 1,1,1-Trichloroethane | NA NA | NA NA | NA | 1.33E+06 | NA | | NA | 4.5E-08 |
| 76131 | Trichloro-1,2,2-triflouroethane, 1,1,2- | NA | NA | NA. | 1.70E+05 | NA | | NA | NA NA |
| 79005 | 1,1,2-Trichloroethane | NA | NA | NA . | 4.42E+06 | NA | | NA | NA |
| 75343 | 1,1-Dichloroethane | NA | NA | NA NA | 5.06E+06 | NA | | NA | 3.7E-07 |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 2.25E+06 | NA | | NA | NA NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA. | 3.00E+05 | NA | | NA | NA NA |
| 95501 | 1,2-Dichlorobenzene | NA NA | NA. | NA NA | 2.77E+07 | NA | | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA NA | NA | NA | 6.88E+04 | NA | | NA | NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA | NA | 7.38E+04 | NA . | | NA | 1.1E-07 |
| 78933 | Butanone, 2- (MEK) | NA. | NA NA | NA | 2.23E+08 | NA | | NA | NA |
| 67641 | Acetone | NA | NA | NA | 1.00E+09 | NA | _ | NA | NA |
| 71432 | Benzene | NA | NA | NA | 1.75E+06 | NA. | 3. | 3E-11 | 5.0E-06 |
| 74839 | Bromomethane | NA | NA | NA | 1.52E+07 | NA | | NA | NA |
| 75150 | Carbon Disulfide | NA | NA | NA | 2.67E+06 | NA | | NA | NA |
| 108907 | Chlorobenzene | NA | NA. | NA | 4.72E+05 | NA. | | NA | 3.2E-07 |
| 75003 | Ethyl Chloride | NA | NA NA | NA. | 5.32E+06 | NA | | NA | NA |
| 67663 | Chloroform | NA | NA. | NA | 7.92E+06 | NA. | | NA | NA |
| 156592 | cis-1,2-Dichloroethylene | NA | NA | NA | 3.50E+06 | NA | | NA | 2.5E-06 |
| 110827 | Cyclohexane | NA | NA | NA | 5.50E+04 | NA | | NA | NA |
| 100414 | Ethylbenzene | NA | NA . | NA | 1.69E+05 | NA | | NA | 8.1E-08 |
| 98828 | Isopropylbenzene | NA | NA NA | NA. | 5.60E+04 | NA | | NA | NA NA |
| 108872 | Methyl cyclohexane | NA | NA | NA. | 1.40E+04 | NA | | ΝA | NA |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA | NA | NA | 5.10E+07 | NA | | NA | 6.0E-08 |
| 75092 | Methylene chloride | NA | NA | NA | 1.30E+07 | NA | | NA | NA |
| 127184 | Tetrachloroethylene | NA NA | NA | NA | 2.00E+05 | NA | | NA | NA |
| 108983 | Toluene | NA | NA | NA | 5.26E+05 | NA | | NA | 4.7E-06 |
| 156605 | trans-1,2-Dichloroethylene | NA | NA | NA | 6.30E+06 | NA | | NA | 4.4E-07 |
| 79016 | Trichloroethylene | NA NA | NA | NA | 1.10E+06 | NA. | | NA | 6.1E-07 |
| 75014 | Vinyl chloride | NA NA | NA | NA | 2.76E+06 | NA. | 1.0 | E-09 | 4.0E-05 |
| 1330207 | Xylenes | NA | NA NA | NA | 2.20E+05 | NA. | | NA . | NA. |
| 98862 | Acetophenone | NA. | NA. | NA | 6.13E+06 | NA . | | NA . | NA |
| 91203 | Naphthalene | NA | NA. | NA | 3.10E+04 | N/A | | NA | 1.2E-06 |
| 91576 | Methylnaphthalene, 2- | NA | NA NA | NA | 2.46E+04 | NA. | | NA | NA NA |
| 92524 | Biphenyl, 1,1'- | NA | NA NA | NA | 6.94E+03 | NA | | NA . | NA. |
| 208968 | Acenaphthylene | NA | NA NA | NA | 3.93E+03 | NA | | NA | 6.0E-07 |
| 83329 | Acenaphthene | NA | NA NA | NA | 4.24E+03 | NA | | NA | NA |
| 86737 | Fluorene | NA | NA NA | NA . | 1.90E+03 | NA | | NA | NA |
| 85018 | Phenanthrene | NA | NA NA | NA . | 1.2BE+03 | NA | <u> </u> | NA | 2.7E-07 |
| 120127 | Anthracese | NA | NA NA | NA | 4.34E+01 | ŇA | | NA. | NA NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA NA | NA | 1.00E+04 | NA | | NA I | 4.8E-04 |
| C11-C22 | C11-C22 Aromatics | NA | NA NA | NA. | 5.B0E+06 | NA | · · · · · · · · · · · · · · · · · · · | NA. | NA NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA NA | NA | 1.10E+07 | NA | | NA. | 1.2E-03 |
| C9-C10 | C9-C10 Aromatics | NA | NA NA | NA | 5.10E+07 | NA NA | | NA. | NA NA |
| C9-C12 | C9-C12 Aliphatics | NA | NA NA | NA | 7.00E+04 | NA NA | | VA. | 2.4E-04 |

95% UCL
Cancer 95% UCL
Risk HI
TOTAL: 1E-09 2E-03
= Cancer risk > 1E-05
or HQ/HI>1E+00

| | 1 | | | | | | | | | | | | | | | | | | |
|---------------------------|---|------------------------|----------------|-----------------|----------------|----------------|-------------------|------------------------|---------------|-------------|---|--------------------|------------------------------|-----------------------|----------------------------|--|------------------------|------------|--------------|
| Appendix C.4 | | | | | | | | | | | | | | | | | | . — | |
| Johnson & Ettinger | Model - Data Entry Screen | | | | | | | | | | | | | | | | | | |
| Inhalation of Votable | re from Groundwaler Idonal Scenario - RME: | | | | | | | | | | | | | | | | | | |
| | come ocenimo - rovis I. Welle G&H Superfund Site, Operable U | L | | | | | | | | | | | | | | | | | |
| Murphy Weste Oil | . I very out i desarbid des, operand d | mm. 2 | | , | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | |
| CALCULATE RISK | -BASED GROUNDWATER CONCENTA | ATION (enter "X" in "Y | ES" box) | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | |
| ļ | YE8 | | | | | | | | | | | | | | | | | | |
| 1 | OR | | | | | | | | | | | | | | | | | | |
| CALCULATERNO | EMENTAL RISKS FROM ACTUAL GRO | | | | | | | | | | | | | | | | | | |
| Jenter 'X' in 'YES" | box and initial groundwater conc. below) | ANNOWALER SOME | REPORTION | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| 1 | YES X | | ENTER | ENTER | ENTER | ENTER | | | | | | | | | | | | | |
| ļ | | | Dec#s | 44.64 | 64.64 | EHILK | ENTER | | | | | | | | | | | | |
| ENTER | | ENTER | below grade | | | Average | Vadose zone | ENTER Lieur-defined | ENTER | ENTER | | | | | | | | | |
| 1 | | 95% UCL | lo bottom | Depth | | eoil/ | 8C8 | VIENOME ZONE | | Vádose zone | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER |
| Chemical | | GEOLENIA MINE | of enciosed | below grade | SCS | groundwater | soft type | soil vapor | eoil dry | ecil total | Vacione zone soii water-filled | Target riek for | Target hazard quodent for | Averaging time for | Averaging | Exposure | - | B | |
| CAS No. | | conc., | space floor, | to water table, | soil lype | temperature, | fused to setumate | OR permeability. | bulk density, | parosity. | porcetty, | carcinogana, | nancarainogene, | carcinogens. | ime for Poncercinageme, | duration, | Exposure frequency, | Exposure | Coversion : |
| (numbers only, | | C _w | با | LWT | directly above | T _# | adi vapor | k. | P, V | n, | 6_V | TR | THQ | AT _C | ATHC | ED. | EF | ET | CF |
| no deshee) | Chemical | (µg/L) | (15 or 200 cm) | (om) | water table | (°C) | permesbility) | Note (cm²) | (O/cm²) | (unitions) | (cm³/cm³) | (unideas) | (unitiess) | (Ma) | *** | | | | |
| | | | | | | | | 1337 | | (A.1) | , / Later) | . /ciscons; | (Assets) | [A[3] | (Y4) | (yra) | (deye/yr) | (lvs/day) | (hra/yr) |
| 71656 | 1,1,1-Trichloroethane | 5.27E+01 | 16 | 62.78 | LS | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | Υ | 70 | T | 1 6 | 76 | 2,5 | 8750 |
| 76131 | Trichloro-1.2.2-triflourostheris, 1.1.2- | | 16 | 62,78 | LS. | 10 | | 1 | 1,6 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | | 78 | 2.5 | 8760 |
| 78343 | 1,1,2-Trichtoroeturre | | 15 | 62.78 | LS | 10 | S | 7" | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 | 6 | × | 78 | 2.5 | 8750 |
| 76354 | 1.1-Dichloroethene | 7,24E+D1 | 16 | 62.78 | . 8 | 10 | 8 | <u> </u> | 1.5 | 0.43 | 0.3 | 1,02-06 | 1 | 70 | 6 | ě – | 78 | 2.5 | 8760 |
| 120821 | 1,1-Dichlorostrytere 1,2,4-Trichloroberzere | 9,00E+00 | 15 | 62.78 | LS | 10 | LS | ! | 1.5 | 0.43 | 0.3 | 1,0E-08 | 1 | 70 | 6 | 6 | 76 | 2.5 | 8760 |
| 95501 | 1.2-Dichiorobenzene | 1,00E+00 | 16 | 62,78 62,78 | 18 | 10 | LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | . 1 | 70 | 6 | 6 | 76 | 2.5 | 8760 |
| 541731 | Dichlorobenzene, 1,3- | 11970.33 | 16 | 62.78 | - iš | 10 | LS LS | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 11 | 70 | <u> </u> | | 78 | 2.5 | 8760 |
| 106487 | 1.4-Dichiorobenzene | | 15 | 62,78 | เร | 10 | LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 70 | - | | 78 | 2.5 | 8760 |
| 78933 67641 | Butanone, 2- (MEX) | | 16 | 62.76 | LS | . 10 | LS . | 1 | 15 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | } | 78 78 | 2.5 | 6760 |
| 71432 | Acetone | 2.42E+01 | 15 | 52.78 | LS | 10 | LS | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | . 70 | - X | } | 78 | 2.5 | 8760 |
| 74839 | Bertane | 6,64E+00 | 15 | 92.78 | | 10 | | 1. | 1.6 | 0.43 | 0.3 | 1.0E-08 | 1 1 | 70 | 6 | ě | 76 | 2.5 | 6760 |
| 75150 | Bromomethane Carbon Disulfide | 1,00E+00 | 15 15 | 62.78 62.78 | <u> </u> | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1. | 70 | | 9 | 76 | 2.5 | 6760 |
| 168667 | Chlorobenzene | 1.00E+00 | 15 | 62 78 | LS LS | 10 | LS LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | | 75 | 2.5 | 6760 |
| 75003 | Ethyl Chloride | 3.06E+01 | 16 | 62.78 | LS | 10 | LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | | | 78 | 2.5 | 8760 |
| 67663 156562 | Chloroform | | 15 | 62.78 | LS | 10 | . LS | 1 | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 | | 9 | 78 78 | 2.5 | 8760 8760 |
| 110827 | cia-1.2-Dichlorosthylene | 7.43E+02 | 18 | 62.78 | LS | 10 | LS. | | 1.5 | 0.43 | 5.3 | 1,9E-06 | 1 1 | 70 | ` | | 78 | 2.5 | 8760 |
| 100414 | Cycloheume Ethylberizene | 7.61E+00 | 18 | 62.78 | L6 | 10 | L9 | 1 | 1.5 | 0.43 | 0.3 | 1.9E-06 | 1 | 70 | | 6 | 78 | 2.5 | 8760 |
| 98828 | Self-Applications | 7.81E+90 | 15 | 62.78 62.78 | L8 | 10 | LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 6 | 6 | 78 | 2.5 | 8760 |
| 98528 108872 | Methyl cyclohecune | 7.00E+00 | 15 | 62.78 | LS | 10 | LS LS | 1 | 1.5 | 0.43 | 0.3 | 1,05-06 | 1 1 | 70 | - 6 | - 6 | 78 | 2.5 | 8760 |
| 1634044 | Medick-Testany-But-I Ether | | 15 | 62.78 | | 10 | LS | + | 1,5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | + 1 | 70 | <u> </u> | 6 | 78 | 2.5 | B7ED |
| 75002 | Methylene chloride | 1.59E+01 | 15 | 62.76 | LS- | 10 | LS | | 1,5 | 0.43 | 1 | 1.0E-06 | 1 1 | 70 | | | 78 78 | 2.5 | 8760 8760 |
| 127184 | Tetrachioroethyseno | 7.00E+00 | 15 | 62.78 | L5 | 10 | LS | 7 | 1,5 | 0.43 | 0.3 | 1,0E-06 | i i | 70 | | | 78 | 2.5 | 5760 |
| 156605 | Tokene | 1.71E+01 | 15 | 62.78 | LS | 10 | LS. | 1 | 1,5 | 0.43 | 0.3 | 1.05-08 | i | 70 | 6 | 6 | 78 | 2.5 | 8760 |
| 79016 | trans-1,2-Dichlorgethylene Trichlorgethylene | 1.23E+01 3.31E+01 | 15 | 62.78 | | 10 | L8 | 1 | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 76 | 6 | 6 | 78 | 2.6 | 8760 |
| 75014 | Virol chickle | 1.85E+02 | 15 | 62,78 52,78 | LS | 10 | | | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 | 6 | 6 | 78 | 2.5 | 8760 |
| 1330207 | XVeres | 1,975,772 | 15 | 52.78 | LS LS | 10 | LS LS | -} | 1.5 | 0.43 | 0.3 | 1,0E-06 | 1 | סי | - 6 | 6 | 78 | 2.5 | 8750 |
| 1330207 98662 91203 | Acetophenone | | 16 | 52.78 | LS | 10 | LS | | 1.5 | 0.43 | 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 1.0E-06 | 1 | 70 70 | <u> </u> | 6 | 78 | 2.5 | 8750 8750 |
| 91203 | Nephthelene | 9,09E+00 | 15 | 62.78 | ĻS | 10 | LS. | 1 | 1.5 | 0.43 | 7.3 | 1.06-06 | + + | 70 | <u> </u> | 6 | 78 78 | 2.5 | 8780 |
| 91576 92524 | Matrylnaphthalone, 2- | 6.89E+00 | 15 | 62.78 | | 10 | LS. | 7 | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | A | ************************************** | (° 78 | 2.5 | 8780 |
| 208968 | Bipharyi, 1,1'- | | 15 | 62,78 | L8 | 10 | L\$ | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | ě | 6 | 78 | 2 5 | 8760 |
| 83329 | Acementativiana | | 15 | 62,7ê | | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 105-06 | 1 | 70 | , š | 6 | 78 | 2.5 | B750 |
| 83329 86737 85016 | Acenari-there Fluorene | | 15 15 | 52.70 | LS US | 10 | L <u>s</u> | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | Б | 6 | 78 | 2.5 | 8750 |
| 65016 | Phenantycene | 5.74E+00 | 16 | 62.78 62.78 | LS LS | 10 | <u>us</u> | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | Б | . 6 | 76 | 2.5 | 8760 |
| 120127 | Anthrecene | | 16 | 62.76 | LS | 10 | <u> </u> | | 1,5 | 0.43 | 0.3 | 1.0E-06 1.0E-08 | 1 | 70 | | - 5 | 78 | 2.5 | 8750 |
| CS-C18 | C9-C18 Allphades | 7,51E+02 | 15 | 62.78 | LS | _ 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1,06-06 | 1 | 70 | <u> </u> | <u> </u> | 78 78 | 2.5 2.5 | 8760 8760 |
| C11-C22 | C11-C22 Aromatica | 4.19E+02 | 15 | 62.78 | LS | 10 | L8 | 1 | 1,5 | 0.43 | 0.3 | 1.0E-06 | - i | 70 | 8 | | 78 | 2.5 | 8760 |
| CS.C10 | CS-CS Altohatics CS-C10 Aromatics | 1,15E+02 7,16E+01 | 15 | 62.76 | LS | 30 | LS | 1 | 1,6 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | 6 | 7.9 | 2.5 | 8760 |
| C5-C8 C9-C10 C9-C12 | C9-C10 Aromatics | 7.186+01 3.30E+01 | 15 16 | 52.76 52.78 | LS LS | 10 | <u>IS</u> | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 5 | 6 | 7ê | 2.5 | 8780 |
| | | | | | | | | | | | | | | | | | | | |

Note:
1) Default and perameters from table 7 of User's Guide for Evaluating Subsurface Vapor Intrusion into Building (U.S. EPA June 19, 2003) were used for soil water filled perceity (S₁), and organic carbon facility (S₁), and local porceity (A₁), and each dry bulk density (S₂).

Appendix C.4
Johnson & Ettinger Model - Chemical Properties Screen
Inhalation of Volatiles from Groundwater
Future Child Recreational Scenario - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

| 1 | | | | | | | | | | | | ļ |
|----------|-------------------------------------|----------------------|----------------------|--------------|--------------|------------------|----------------|----------------|---------------------------------------|-------------|--------------------|----------------------|
| (| | | | Henry's | Henry's | Enthalpy of | | | Organic | Pure | | 1 |
| | | | | law constant | law constant | vaporization at | Normal | | carbon | component | Unit | |
| | | Diffusivity | Diffusivity | at reference | reference | the normal | boiling | Critical | partition | water | risk | Reference |
| ŀ | | in air, | in water, | temperature, | temperature, | boiling point, | point, | temperature, | coefficient, | solubility, | factor, | conc., |
| Chemical | | D_a | D _w | Н | TR | $\Delta H_{v,b}$ | Τ _B | T _C | K _{oc} | S | URF | RfC |
| CAS No. | Chemical | (cm ² /s) | (cm ² /s) | (atm-m³/mol) | (°C) | (cal/mol) | (°K) | (°K) | (cm ³ /g) | (mg/L) | $(\mu g/m^3)^{-1}$ | (mg/m ³) |
| | | | | | | | ··· | | · · · · · · · · · · · · · · · · · · · | \g = / | | |
| 71556 | 1,1,1-Trichloroethane | 7,80E-02 | 8.80E-06 | 1.72E-02 | 25 | 7.136 | 347.24 | 545.00 | 1.10E+02 | 1.33E+03 | N/A | 2.2E+00 |
| 76131 | Trichloro-1,2,2-triflouroethane, 1, | 2.88E-02 | 8.07E-06 | 5.17E-01 | 25 | 1.326 | 320.70 | 481.05 | 2.25E+02 | 1.70E+02 | N/A | 3.0E+01 |
| 79005 | 1,1,2-Trichloroethane | 7.80E-02 | 8.80E-06 | 9.12E-04 | 25 | 8,322 | 386.15 | 602.00 | 5.01E+01 | 4.42E+03 | 1.6E-05 | 2.2E+00 |
| 75343 | 1,1-Dichloroethane | 7.42E-02 | 1.05E-05 | 5.61E-03 | 25 | 6,895 | 330.55 | 523.00 | 3.16E+01 | 5.06E+03 | N/A | 5.0E-01 |
| 75354 | 1,1-Dichloroethylene | 9.00E-02 | 1.04E-05 | 2.61E-02 | 25 | 6,247 | 304.75 | 576.05 | 5.89E+01 | 2.25E+03 | N/A | 2.0E-01 |
| 120821 | 1,2,4-Trichlorobenzene | 3.00E-02 | 8.23E-06 | 1.42E-03 | 25 | 10,471 | 486.15 | 725.00 | 1.78E+03 | 3.00E+02 | N/A | 2.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 6.88E-02 | 9.41E-06 | 1.62E-06 | 25 | 1,223 | 465.00 | 697.50 | 5.34E+01 | 2.77E+04 | N/A | N/A |
| 541731 | Dichlorobenzene, 1,3- | 4.14E-02 | 8.85E-08 | 4.70E-03 | 25 | 1,242 | 446.00 | 683,96 | 1.70E+02 | 6.88E+01 | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 6.90E-02 | 7.90E-06 | 2.43E-03 | 25 | 9,271 | 447.21 | 684.75 | 6.17E+02 | 7.38E+01 | N/A | 8.0E-01 |
| 78933 | Butanone, 2- (MEK) | 8.08E-02 | 9.80E-06 | 5.60E-05 | 25 | 1,311 | 352.50 | 528.75 | 3.83E+00 | 2.23E+05 | N/A | N/A |
| 67641 | Acetone | 1.24E-01 | 1.14E-05 | 3.88E-05 | 25 | 6,955 | 329.20 | 508.10 | 5.75E-01 | 1,00E+06 | N/A | N/A |
| 71432 | Benzene | 8.80E-02 | 9.80E-06 | 5,56E-03 | 25 | 7,342 | 353.24 | 562.16 | 5.89E+01 | 1.75E+03 | 7.8E-06 | 3.0E-02 |
| 74839 | Bromomethane | 7.28E-02 | 1.21E-05 | 6.22E-03 | 25 | 1,362 | 276.50 | 414.75 | 1.43E+01 | 1.52E+04 | N/A | 5.0E-03 |
| 75150 | Carbon Disulfide | 1.04E-01 | 1.29E-05 | 1.27E-02 | 25 | 6,391 | 319.00 | 552.00 | 5.14E+01 | 2.67E+03 | N/A | 7.0E-01 |
| 108907 | Chlorobenzene | 7.30E-02 | 8.70E-06 | 3.71E-03 | 25 | 8,410_ | 404.87 | 632.40 | 2.19E+02 | 4.72E+02 | N/A | 6.0E-02 |
| 75003 | Ethyl Chloride | 1.26E-01 | 6.50€-06 | 8.67E-03 | 25 | 1,355 | 249.00 | 373.50 | 1.43E+01 | 5.32E+03 | N/A | 1.0E+01 |
| 67663 | Chloroform | 1.04E-01 | 1,00E-05 | 3.66E-03 | 25 | 6,988 | 334.32 | 536.40 | 3.98E+01 | 7.92E+03 | 2.3E-05 | 5.0 E- 02 |
| 156592 | cis-1,2-Dichloroethylene | 7.36E-02 | 1.13E-05 | 4.07E-03 | 25 | 7,192 | 333.65 | 544.00 | 3,55E+01 | 3.50E+03 | N/A | 2.0E-01 |
| 110827 | Cyclohexane | 8.00E-02 | 9.00E-06 | 2.00E+00 | 25 | 1,309 | 353.85 | 530.78 | 1.60E+02 | 5.50E+01 | #N/A | #N/A |
| 100414 | Ethylbenzene | 7,50E-02 | 7,80E-06 | 7.88E-03 | 25 | 8,501 | 409.34 | 617.20 | 3.63E+02 | 1.69E+02 | N/A | 1.0€+00 |
| 98828 | Isopropylbenzene | 6.50E-02 | 7.83E-06 | 1.47E-02 | 25 | 1,259 | 425.40 | 631.01 | 9.31E+03 | 5.60E+01 | N/A | 4.0E-01 |
| 108872 | Methyl cyclohexane | 9.86€-02 | 8.52E-06 | 4.23E-01 | 25 | 1,296 | 373.90 | 560.85 | 2.68E+02 | 1.40E+01 | N/A | 3.0E+00 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1.02E-01 | 1.05E-05 | 5.87E-04 | 25 | 1,324 | 328.36 | 497.11 | 3.84E+01 | 5.10E+04 | N/A | 3.0E+00 |
| 75092 | Methylene chloride | 1.01E-01 | 1.17E-05 | 2.19E-03 | 25 | 6,706 | 313.00 | 510.00 | 1.17E+01 | 1.30E+04 | 4.7E-07 | 3.0E+00 |
| 127184 | Tetrachloroethylene | 7.20E-02 | 8.20E-06 | 1,84E-02 | 25 | 8,288 | 394,40 | 620.20 | 1,55E+02 | 2.00E+02 | 5.9E-06 | N/A |
| 108883 | Toluene | 8.70E-02 | 8.60E-06 | 6.63E-03 | 25 | 7,930 | 383,78 | 591.79 | 1.82E+02 | 5.26E+02 | N/A | 4.0E-01 |
| 156605 | trans-1,2-Dichloroethylene | 7.07E-02 | 1.19E-05 | 9.39E-03 | 25 | 1,333 | 320.85 | 516.50 | 5.25E+01 | 6.30E+03 | N/A | 2.0E-01 |
| 79016 | Trichloroethylene | 7.90E-02 | 9.10E-06 | 1.03E-02 | 25 | 7,505 | 360.36 | 544.20 | 1.66E+02 | 1,10E+03 | N/A | 4.0E-02 |
| 75014 | Vinyl chloride | 1.06E-01 | 1.23E-05 | 2.71E-02 | 25 | 5,250 | 259.25 | 432.00 | 1.86€+01 | 2.76E+03 | 8.8E-06 | 1.0E-01 |
| 1330207 | Xylenes | 7,69E-02 | 8,44E-06 | 6.73E-06 | 25 | 1,264 | 417.40 | 616.21 | 2.41E+02 | 2.20E+02 | N/A | 1.0E-01 |
| 98862 | Acetophenone | 6.00E-02 | 8.73E-06 | 1,02E-05 | 25 | 1,214 | 475.00 | 712.50 | 4.62E+01 | 6.13E+03 | N/A | N/A |
| 91203 | Naphthalene | 5.90E-02 | 7.50E-06 | 4.83E-04 | 25 | 10,373 | 491.14 | 748.40 | 2.00E+03 | 3.10E+01 | N/A | 3.0E-03 |
| 91576 | Methylnaphthalene, 2- | 4.84E-02 | 7.75E-06 | 1.01E-03 | 25 | 1,169 | 514.05 | 761.01 | 8.51E+03 | 2.46E+01 | N/A | 3.0E-03 |
| 92524 | Biphenyl, 1,1'- | 4.04E-02 | 8.15E-06 | 3.03E-04 | 25 | 1,149 | 529,10 | 793.65 | 6.25E+03 | 6.94E+00 | N/A | N/A |
| 208968 | Acenaphthylene | 4.43E-02 | 7.44E-06 | 2.80E-04 | 25 | 1,118 | 553.00 | 792.01 | 4.79E+03 | 3.93E+00 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 4.21E-02 | 7.69E-06 | 1.55E-04 | 25 | 12,155 | 550.54 | 803.15 | 7.08E+03 | 4.24E+00 | N/A | 3.0E-03 |
| 86737 | Fluorene | 3.63E-02 | 7.88E-06 | 9,41E-08 | 25 | 12,666 | 570,44 | 870.00 | 7.71E+03 | 1.90E+00 | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 3.30E-02 | 7.47E-06 | 1.30E-04 | 25 | 1,057 | 613.00 | 869.01 | 1.41E+04 | 1.28E+00 | N/A | 3.0E-03 |
| 120127 | Anthracene | 3.24E-02 | 7.74E-06 | 6.51E-05 | 25 | 13,121 | 615.18 | 873.00 | 2.95E+04 | 4.34E-02 | N/A | 3.0E-03 |
| C9-C18 | C9-C18 Aliphatics | 6.00E-02 | 1.00E-05 | 1.66E+00 | 25 | NA NA | NA_ | NA NA | 6.80E+05 | 1.00E+01 | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 6.00E-02 | 1.00E-05 | 7.32E-04 | 25 | NA | NA. | NA NA | 5.00E+03 | 5.80E+03 | N/A | 5.0E-02 |
| C5-C8 | C5-C8 Aliphatics | 6.00E-02 | 1.00E-05 | 1.30E+00 | 25 | NA | NA | NA | 2.27E+03 | 1.10E+04 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 6.00E-02 | 1.00E-05 | 7.92E-03 | 25 | NA NA | NA | NA | 1.78E+03 | 5.10E+04 | N/A | 5.0E-02 |
| C9-C12 | C9-C12 Aliphatics | 6.00E-02 | 1.00E-05 | 1.56E+00 | 25 | NA | NA |] NA | 1.50E+05 | 7.00E+01 | N/A | 2.0E-01 |

Appendix C.4
Johnson & Ettinger Model - Calculations Screen
Inhalation of Votation from Groundwater
Future Child Representationed Science - RME
Southwest Princip, Wallis G&H Superfund SHe, Operable Link 2
Murphy Waste Cil

| | Source- building separation, | Verious zone soil ak-filled porosky, e, ^V | Vadose zone effective total fluid saturation, B _m | Vadose zone soil intrinsic permeability, k, | Varione zone soli relative air permeability, k _m | Vadose zone soil effective vapor permeability, k, | Thickness of capillary zone, | Total perosity in capitary zone, | Air-filled porosity in capitlery zone, the capitle of the capit | Winter-filled porosity in capitary zone, 0 _{mm} | Floor wall seem perimeter, Xarack | Skig. veniliation rele. | Area of enclosed apace below grade, | Crack- to-total area ratio, | Grack depth below grade, | Enthalpy of vaporization at ave. groundwater lemperature, | Henry's law constant at eve. groundwater temperature, | lemperature, |
|--|------------------------------------|--|--|---|---|---|------------------------------|---|--|--|---|-------------------------------|-------------------------------------|--------------------------------------|-----------------------------------|--|--|----------------------|
| | (cm) | (cm²/cm²) | (om³/cm³) | (cm²) | (cm²) | (em ³) | (em) | (cm²/sm²) | (au ₂ /au ₂) | (cm²/cm²) | | (GTI ³ /8) | ~g | η | Zora | AHL, TE | Hra | H ₇₈ |
| | | | | | 74 / | | - jenij | (GII ZGII) | (un /un) | (cm /cm) | (cm) | (cm/#) | (cm²) | (unitiess) | (cm) | (cal/mol) | (atm-m³/mol) | (unitiess) |
| 71556 1,1,1-Trichlorcethene | 47.78 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 5.33E-09 | 16.75 | 0.43 | | | | | | | | | | |
| 76131 Trichkro-1,2,2-triflourcethane, 1,1,2- | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | D. 127 | 0.303 | 6.55E+03 | | | 2.48E-04 | 15 | 7.885 | 8.50E-03 | 3.66E-01 |
| 79005 1,1,2-Trichloroethene | 47.78 | 0,130 | 0,659 | 1,62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 8.55E+03 | 6.93E+06 | 2.60E+06 | 2.45E-04 | 15 | 1,436 | 4.556-01 | 1.96E+01 |
| 75343 1,1-Dichloroethene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6,93€+05 | | 2.48E-04 | 15 | 9,672 | 3,88E,-04 | 1.67E-02 |
| 75354 1,1-Dichloroethylene | 47.78 | D,130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7,450 | 2.88E-03 | 1.24E-01 |
| 120521 1,2,4-Trichlorobenzene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6,392 | 1.47E-02 | 6.34E-01 |
| 95501 1,2-Dichlorobenzene | 47.78 | 0.130 | 0,659 | 1.62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | | 2.60E+06 | 2.48E-Q4 | 15 | 13,230 | 4.35E-04 | 1.87E-02 |
| 541731 Dichlorobenzene, 1,3- | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | 6.93E+05 | 2.60E+06 | Z.48E-04 | 15 | 1,521 | 1.41E-06 | 6.09E-05 |
| 106467 1,4-Dichlorobenzene | 47,78 | 0,130 | 0.659 | 1.62E-06 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,503 | 4.11E-03 | 1.77E-01 |
| 78933 Butanone, 2- (MEK) | 47.70 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 0.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 6.93E+05 | 2.60E+06 2.60E+06 | 2.48€-04 | 15 | 11,243 | 8.89E-04 | 3.83E-02 |
| 67641 Acetone | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | | | 2.48E-04 | 15 | 1,486 | 4,90E-05 | 2.11E-03 |
| 71432 Benzane | 47.76 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0,127 | 0.303 | 6.55E+03 | | 2.60E+05 | 2.48E-04 | 15 | 7,559 | 1.97E-05 | 8.50E-04 |
| 74839 Bromomethane | 47,78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | | 2.60E+06 | 2.48E-04 | 15 | 8,122 | 2.69E-03 | 1.18E-01 |
| 75150 Carbon Disuffice | 47.7B | 0.130 | 0.659 | 1,62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | | 2.60E+06 2.60E+06 | 2.48E-04 | 15 | 1,337 | 5.52E-03 | 2.38E-01 |
| 108907 Chlorobenzene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | | | 2.48E-04 | 15 | 6,682 | 6.99E-03 | 3.01E-01 |
| 75003 Ethyl Chloride | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9,803 | 1.54E-03 | 6.65E-02 |
| 67663 Chloroform | 47,78 | 0.130 | 0.659 | 1.62E-08 | D.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6 93E+05 | 2,60E+06 | 2.48E-04 | 15 | 1,201 | 7,79E-03 | 3.35E-01 |
| 156592 cie-1,2-Dichioroethylene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | 6 93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7,554 | 1.86E-03 | 8.02E-02 |
| 110827 Cyclohexane | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 5.33E-09 | 15.75 | 0.43 | 0.127 | 0.303 | | 6.93E+0.5 | 2.60E+06 | 2.48E-04 | 15 | 7,734 | 2.04E-03 | 8.77E-02 |
| 100414 Ethylbenzene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+08 | 2.48E-04 | 15 | 1,486 | 1.75E+00 | 7.54E+01 |
| 95528 leopropylbenzene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 10,155 | 3.18E-03 | 1.37E-01 |
| 108872 Methyl cyclohexane | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 8.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,540 | 1.28E-02 | 5.51E-01 |
| 1634044 Methyl-Terlary-Butyl Ether | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,505 | 3.70E-01 | 1.59E+01 |
| 75092 Methylene phloride | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2,60E+06 | 2.48E-04 | . 15 | 1,447 | 5.16E-04 | 2.22E-02 |
| 127184 Tetrachloroethylene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7,034 | 1.17E-03 | 5.03E-02 |
| 108883 Toluene | 47.78 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6 33F-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.50E+06 | 2.48E-04 | 15 | 9,553 | 7.83E-03 | 3.37E-01 |
| 156605 trans-1,2-Dichloroethylane | 47,78 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 6.93E+05 | 2.50E+06 | 2.48E-04 | 15 | 9,154 | 2,92E-03 | 1.26E-01 |
| 79016 Trichkmathylene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 6.56E+03 | 6,93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,417 | 6,27E-03 | 3.56E-01 |
| 75014 Vinyl chloride | 47.7B | 0.130 | 0 659 | 1.62E-08 | 0.330 | 6,33E-09 | 15.75 | 0.43 | 0.127 | 0.303 D.303 | 6.55E+03 6.55E+03 | 6,93E+06 | 2.60E+08 | 2.48E-04 | 15 | 8,557 | 4,79E-03 | 2.06E-01 |
| 1330207 Xylenee | 47.76 | 0.130 | 0.659 | 1.82E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5,000 | 1.73E-02 | 7.46E-01 |
| 96562 Acelophenone | 47.7B | 0,130 | 0.659 | 1.82E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | | 2.60E+06 | 2.48E-Q4 | 15 | 1,542 | 5.86E-06 | 2.52E-04 |
| 91203 Naphthelene | 47,78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 6.93E+05 | 2.60E+06 | 2,48E-04 | 15 | 1,518 | 8,91E-06 | 3.83E-04 |
| 91876 Methylmaphthalene, 2- | 47,78 | 0.130 | 0.659 | 1,62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0,127 | 0.303 | 6.55€+03 6.55E+03 | 6.93E+05 | 2,60E+06 | 2.48E-04 | 15 | 12,913 | 1,52E-04 | 5.55E-03 |
| 92524 Biphenyl, 1,1'- | 47.78 | 0.130 | 0.659 | 1,62E-08 | 0.390 | 5 33F-09 | 16.75 | 0.43 | 0.127 | 0.303 | | 6.93E+05 | | 2.48E-04 | 15 | 1,508 | 8.86E-04 | 3.81E-02 |
| 208958 Acenaphthylene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33£-09 | 18.75 | 0.43 | 0.127 | 0.303 | 0.335+03 | 6.93E+05 | 2.60E+06 | 2.45E-04 | 15 | 1,472 | 2.65E-04 | 1.14E-02 |
| E3329 Acenaphthene | 47.78 | 0.130 | 0,659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | | 2.48E-04 | 15 | 1,513 | 2.45E-04 | 1.05E-02 |
| 85737 Fluorene | 47.78 | 0.130 | 0.659 | 1.52E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | | 0.50E+03 | 8.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 16,123 | 3.67E-05 | 1,58E-03 |
| 85018 Phenanitrana | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 5.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | | 2.50€+05 | 2.46E-04 | 15 | 16,235 | 2,20E-08 | 9.48E-07 |
| 120127 Antiracana | 47.78 | 0,130 | 0.659 | 1,62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | | 2.60E+06 | 2.48E-04 | 15 | 1,479 | 1,14E-04 | 4.906-03 |
| C9-C18 C9-C18 Aliphatics | 47.78 | 0.130 | 0.659 | 1.625-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | | 2.80E+06 | Z45E-04 | 15 | 18,353 | 1,26E-05 | 5.43E-04 |
| C11-G22 C11-C22 Arometice | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | | 2.60E+06 | 2.48E-04 | 15 | NA I | 8.28E-01 | 3.56E+01 |
| C5-C8 C5-C8 Aliphatics | 47.78 | D.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 10.75 | 0.43 | 0.127 | | 6.56E+03 | 6.93E+05 | 2.60E+05 | 2.48E-04 | 15 | , NA | 3.60E-04 | 1.55E-02 |
| C9-C10 C9-C10 Aromatica | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18 75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA I | 6.48E-01 | 2.79E+01 |
| C9-C12 C9-C12 Aliphatics | 47 78 | 0.130 | 0.659 | 1.52E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | 5.93E+05 6.93E+05 | 2.60E+06 | 2.48E-04 2.48E-04 | 15 | NA NA | 3.96E-03 7.80E-01 | 1.70E-01 3.35E+01 |

Appendix C.4
Johnson & Ettinger Model - Celculations Screen
Inhalation of Volatilae from Groundwater
Futuse Child Recreational Scanario - RME
Southwest Proeties, Wells G&H Superfund Ste. OperMurchy Weste Oil

| | Vapor viscoelty at eve, soil temperature, Pra (g/cm-s) | Vadose zone effective diffusion coefficient, D***, (cm²/s) | Capillary zone effective diffusion coefficient, Offi _{er} (om ² /s) | Total overell effective diffusion coefficient, D ^{eff} (om ² /s) | Ciffusion path langth, L ₂ (cm) | Convection path length, L _a | Source vapor conc., C _{harre} (µg/m³) | Crack radius. fores. (cm) | Average vapor flow rate into bidg . Q _{upt} (cm ³ /s) | Grack effective diffusion coefficient, D ^{ereck} (cm ² /s) | Area of creck, A _{rea} (cm ²) | Exponent of eauty dent foundation Paciet number, exp(Pe ¹) (unities) | Infinite source indoor alternuction coefficient, or (untileas) | infinite source bidg. conc., C _{hamin} (up/m ³) | Unit risk factor, URF (ug/m ¹) ⁻¹ | Reference conc. RfC (mg/m²) |
|---|---|--|---|--|--|---|--|------------------------------------|--|--|---|--|--|---|--|--------------------------------------|
| | (g/cm-a) | (cm /s) | (CIT (II) | (Orti 74) | (cm) | (cm) | (Japan) | (om) | (511,71) | from var) | <u> </u> | (Urriness) | (Orange) | (page-11) | (Japon) | (|
| 71556 1.1.1-Trichkorosthene | 1,75E-04 | 4.75E-04 | 4.45E-04 | 4.63E-04 | 47.78 | 15 | 193E+04 | 0.10 | 1.04E+01 | 4 75E-04 | 6.45E+02 | 9.58E+220 | 1,06E-05 | 2.05E-01 | N/A | 2.2E400 |
| 76131 Trichloro-1,2,2-triflouroethene, 1,1,2- | 1.75E-04 | 1,75E-04 | 1.63E-04 | 1.70E-04 | 47.78 | 15 | N/A | 0.10 | 1045+011 | 1,75E-04 | 6.45E+02 | #NUM | 7.06E-08 | N/A | N/A | 3.0E+01 |
| 7905 1.1.2-Trichlorosthans | 1.75E-04 | 5.24E-04 | 4.95E-04 | 5.13E-04 | 47.78 | 15 | N/A | 0.10 | 1.04E+01 | 5 24E 04 | 6.45E+02 | 1.44E+200 | 1.09E-05 | N/A | 1.6E-05 | 2.2E+00 |
| 75343 1,1-Dichloroethane | 1.75E-04 | 4.58E-04 | 4.29E-04 | 4.46E-04 | 47.78 | 15 | 8.97E+03 | 0.10 | 1.04E+01 | 4 58E-04 | 6.45E+02 | 1.67E+229 | 1.05E-05 | 8.43E-02 | N/A | 5 0E-01 |
| 75354 1,1-Dichloroethylune | 1.75E-04 | 5.47E-04 | 5.12E-04 | 5.33E-04 | 47.78 | 15 | 5.71E+03 | 0.10 | 1.04E+01 | 5.47E-04 | 6.45E+02 | 8.08E+191 | 1 10E-05 | 6.30E-02 | N/A | 2.0E-01 |
| 120821 1.2.4-Trichlorobenzene | 1.75E-04 | 2.25E-04 | 2.14E-04 | 2.21E-04 | 47.78 | 15 | N/A | 0.10 | 104E+01 | 2 25E-04 | 6.45E+02 | MUM | 8.04E-05 | N/A | N/A | 2.0E-01 |
| 95501 1.2-Dichlorobenzene | 1.75E-04 | 1.58E-02 | 1.60E-02 | 1.50E-02 | 47.78 | 15 | 6.09E-02 | 0.10 | 1.04E+01 | 1.56E-02 | 6.45E+02 | 5.40E+06 | 1.48E-05 | 9.02E-07 | N/A | N/A |
| 541731 Dichlorobenzene, 1.3- | 1.75E-04 | 2.56E-04 | 2.40E-04 | 2 49E-04 | 47.78 | 15 | N/A | 0.10 | 104E+01 | 2.56E-04 | 6.45E+02 | MUM | 6.49E-06 | N/A | N/A | N/A |
| 106467 1.4-Dichlorobertzene | 1.75E-04 | 4.38E-04 | 4.12E-04 | 4.28E-04 | 47.78 | 15 | NA | 0.10 | 1.04E+01 | 4.38E-04 | 6.45E+02 | 2 83E+239 | 1.04F-05 | N/A | N/A | 5.0E-01 |
| 76933 Butanone, 2- (MEK) | 1.75E-04 | 9.45E-04 | 9.27E-04 | 9 30E-04 | 47.75 | 15 | N/A | 0 10 | 1.04E+01 | 9.45E-04 | 6.45E+02 | 1.09E+111 | 1.25E-05 | N/A | N/A | N/A |
| 67641 Acetone | 1.75E-04 | 2.07E-03 | 2.06E-03 | 2.06E-03 | 47.78 | 15 | 2.06E+01 | 0 10 | 1.04E+01 | 2.07E-03 | 6.45E+02 | 5.63E+50 | 1.37E-05 | 2.83E-04 | N/A | N/A |
| 71432 Benzere | 1.75E-04 | 5.42E-04 | 5.07E-04 | 5.28E-04 | 47.78 | 15 | 7.57E+02 | 0 10 | 1.04E+01 | 5.42E-04 | 6.45E+02 | 6.73E+193 | 1.10E-05 | 8.34E-03 | 7.8E-06 | 3.0E-02 |
| 74839 Bromomethene | 1.75E-04 | 5.42E-04 4.46E-04 | 4.18E-04 | 4.35E-04 | 47.78 | 15 | 2.38E+02 | 0 10 | 1.04E+01 | 4.48E-04 | 6 45E+02 | 1.91E+235 | 1.04E-05 | 2.47E-03 | N/A | 5.0E-03 |
| | 1.75E-04 | | | 6.18E-04 | 47.78 | 15 | 2.30E+V2 | 0.10 | 1.04E+01 | 6.34E-04 | 6.45E+02 | | 1.15E-05 | N/A | N/A | 7.0E-01 |
| 75150 Cerbon Disuffide | 1,75E-04 | 6.34E-04 4.55E-04 | 5 94E-04 4 27E-04 | 4.44E-04 | | | 6.65E+01 | 0.10 | 1.04E+01 | 4.55E-04 | 6.45E+02 | | 1.05E-05 | 6.97E-04 | N/A | 6.0E-02 |
| 106907 Chlorobenzene | | | | 7.45E-04 | 47,78 | 15 | 1.02E+04 | 0.10 | 1.04E+01 | 7.56E-04 | 6.45E+02 | | 1.19E-05 | 1.22E-01 | N/A | 1.0E+01 |
| 75003 Ethyl Chloride | 1.75E-04 | 7.86E-04 | 7.16E-04 | | 47.78 | 15 | | | 1.04E+01 | | 6.45E+02 | | 1.15E-05 | N/A | 2.3E-05 | 5.0E-02 |
| 67663 Chloroform | 1.75E-04 | 6.43E-04 | 6.02E-04 | 6.26E-04 | 47,76 | 15 | N/A | Q. 10 | 1.04E+01 | 6.43E-04 | | 2.45E+163 7.49E+228 | 1.05E-05 | 6.65E-01 | N/A | 2.0E-01 |
| 156592 cis-1,2-Dichloroethylene | 1.75E-04 | 4.59E-04 | 4.30E-04 | 4.47E-04 | 47.76 | 15 | 6.52E+04 | 0.10 | | 4.59E-04 | 6.45E+02 | | | N/A | | #N/A |
| 110827 Cyclohexane | 1.75E-04 | 4.85E-04 | 4.53E-04 | 4.72E-04 | 47.78 | 15 | N/A | 0.10 | 1,04E+01 | 4.85E-04 | 6.45E+02 | 3.37E+216 | 1.07E-05 | | #N/A | |
| 100414 Ethylsenzene | 1.75E-04 | 4.60E-04 | 4.31E-04 | 4.48E-04 | 47,70 | 15 | 1.04E+03 | 0,10 | 1.04E+01 | 4.60E-04 | 6.45E+02 | 1.44E+228 | 1.05E-05 | 1 09E-02 | N/A | 1.0E+00 |
| 98828 Isopropylbenzene | 1.75E-04 | 3.95E-04 | 3.70E-04 | 3,65E-04 | 47.78 | 15 | N/A | 0.10 | 1.04E+01 | 3.95E-04 | 6.45E+02 | 3.75E+265 | 1.00E-05 | N/A | N/A | 4.DE-D1 |
| 108872 Methyl cyclohesane | 1.75E-04 | 5.98E-04 | 5.59E-04 | 5.52E-04 | 47.78 | 15 | 1.11E+05 | 0.10 | 1.04E+01 | 5,98E-04 | 6.45E+02 | 4.68E+175 | 1.13E-05 | 1.26E+00 | N/A | 3.0E+00 |
| 1634044 Methyl-Yerttery-Butyl Ether | 1.75E-04 | 6.67E-04 | 6.28E-04 | 6.51E-04 | 47.78 | 15 | N/A | 0,10 | 1.04E+01 | 6.67E-04 | 6,45E+02 | 2.47E+157 | 1,16E-05 | N/A | N/A | 3.0E+00 |
| 75092 Methylene chlonde | 1.75E-04 | 6.35E-04 | 5.96E-04 | 6.19E-04 | 47.78 | t5 | 7.98E+02 | 0.10 | 1.04E+01 | 8,35E-04 | 6,45E+02 | 2.18E+165 | 1 15E-05 | 9.14E-03 | 4.7E-07 | |
| 127184 Tetrachicrosthylene | 1 75E-04 | 4.39E-04 | 4.116-04 | 4.27E-04 | 47.78 | 15 | 2.36E+03 | 0.10 | 1.04E+01 | 4.39E-04 | 6.45E+02 | 1.92E+239 | 1 04E-05 | 2.45E-02 | 5.9E-06 | |
| 108683 Toluene | 1 75E-04 | 5.34E-04 | 5.00E-04 | 5.20E-04 | 47,78 | 15 | 2.16E+03 | 0.10 | 1.04E+01 | 5.34E-04 | 6.45E+02 | 4.07E+196 | | 2.37E-02 | N/A | 4 0E-01 |
| 156605 trans-1,2-Dichloroethylene | 1.75E-04 | 4.32E-04 | 4.04E-04 | 4.20E-04 | 47,78 | 15 | 4.55E+03 | D.10 | 1.04E+01 | 4.32E-04 | 6.45E+02 | 1.43E+243 | 1.03E-05 | 4.69E-02 | NVA | 2.0E-01 |
| 79016 Trichloroethylene | 1.75E-04 | 4.83E-04 | 4,52E-04 | 4.70E-04 | 47,76 | 15 | 6 B3E+03 | D.1D | 1.04E+01 | 4.63E-04 | B.45E,+02 | 2.03E+217 | 1.07E-05 | 7.28E-02 | N/A | 4.0E-02 |
| 75014 Virryl chloride | 1.75E-04 | 6.44E-04 | 6,02E-04 | 6.27E-04 | 47,75 | 15 | 1 38E+05 | D.10 | 5.04E+01 | 6.44E-04 | B.45E+02 | 1.02E+163 | 1.15E-05 | 1.59E+00 | 0.6E-06 | |
| 1330207 Xylenes | 1.75E-04 | 3.76E-03 | 3.81E-03 | 3,77E-03 | 47.78 | 15 | N/A | 0.10 | 1.D4E+01 | 3 75E-03 | 6.45E+02 | 1.01E+28 | 1.43E-05 | NA | N/A | 1.0E-01 |
| 98882 Acetophenone | 1.75E-04 | 2.60E-03 | 2.64E-03 | 2.62E-03 | 47.78 | 15 | N/A | 0.10 | 1 04E+01 | 2.60E-03 | 6.45E+02 | 2.48E+40 | 1.40E-05 | NA | N/A | N/A |
| 91203 Naphthalene | 1.75E-04 | 4.702-04 | 4.50E-04 | 4.62E-04 | 47,78 | 15 | 5.96E+01 | 0.10 | 1.04E+01 | 4.70E-04 | 6,45E+02 | 2.56E+223 | 1.06E-05 | B.32E-04 | N/A | 3.0E-03 |
| 91576 Methylnaphthalene, 2- | 1.75E-04 | 3.135-04 | 2.95E-04 | 3.06E-04 | 47.78 | 15 | 2.24E+02 | 0.10 | 1.04E+01 | 3.13E-04 | 6.45E+02 | #NUM | 9.23E-06 | 2 07E-03 | N/A | 3.0E-03 |
| 92524 Blohenyl, 1,1- | 1.75E-04 | 3 15E-04 | 3.01E-04 | 3.09E-04 | 47,78 | 15 | N/A | 0.10 | 1 04E+01 | 3.15E-04 | 6.45E+02 | #NUM! | 9.27E-06 | N/A | N/A | N/A |
| 208968 Acenaphthylene | 1.75E-04 | 3.38E-04 | 3.22E-04 | 3.31E-04 | 47.78 | 15 | N/A | 0 10 | 1 04E+01 | J.38E-04 | 6.45E+02 | MUMI | 9.51E-06 | NA | N/A | 3.0E-03 |
| 83329 Acenephthene | 1.75E-04 | 7.33E-04 | 7.31E-04 | 7.32E-04 | 47,78 | 15 | N/A | 0 10 | 1 04E+01 | 7,33E-04 | 6 45E+02 | 1.38E+143 | 1.19E-05 | NA | N/A | 3.0E-03 |
| 88737 Flucrene | 1.75E-04 | 8.16E-01 | 8.39E-01 | 0.25E-01 | 47.78 | 15 | N/A | 0.10 | 1.045+01 | 8.16E-01 | 6.45E+02 | | 5.84E-05 | N/A | IVA | 3.0E-03 |
| \$5018 Phenanthrene | 1.75E-04 | 3.50E-04 | 3.41E-04 | 3.46E-04 | 47,78 | 15 | 2.81E+01 | 0.10 | 1.04E+01 | 3.50E-04 | 6.45E+02 | | 9.56E-06 | 2 72E-04 | N/A | 3.0E-03 |
| 120127 Anthracene | 1.75E-04 | 1.60E-03 | 1.62E-03 | 1.616-03 | 47,7B | 15 | N/A. | 0.10 | 1.04E+01 | 1.60E-03 | | 6.32E+65 | 1.34E-05 | N/A | N/A | 3.0E-03 |
| C9-C18 C9-C16 Alighatics | 1.75E-04 | 3.64E-04 | 3.40E-04 | 3.548-04 | 47,76 | 15 | 3.39E+07 | 0.10 | 1.04E+01 | 3.64E-04 | | 4.88E+268 | 9.74E-06 | 3.30E+02 | N/A | 2 0E-01 |
| C11-C22 C11-C22 Aromatica | 1.75E-04 | 4.27E-04 | 4.05E-04 | 4.18E-04 | 47.76 | 15 | 6.49E+03 | 0.10 | 1.04E+01 | 4.27E-04 | | 7.52E+245 | 1,03E-05 | 6.68E-02 | N/A | 5.0E-02 |
| C6-C8 C5-C8 Alighetics | 1,75E-04 | 3.64E-04 | 3.40E-04 | 3.54E-04 | 47,78 | 15 | 3.22E+05 | 0.10 | 1.04E+01 | 3.64E-04 | 6.45E+02 | | 9.74E-06 | 3.14E+01 | N/A | 2.0E-01 |
| C9-C10 C9-C10 Aromatics | 1.75E-04 | 3.69E-04 | 3.46E-04 | 3.60E-04 | 47.78 | 15 | 1,22E+04 | 0.10 | 1.04E+01 | 3.69E-04 | 6.45E+02 | 1.62E+284 | 9.60E-06 | 1.20E-01 | N/A | 5.0E-02 |
| C9-C12 C9-C12 Aliphatics | 1.75E-04 | 3.64E-04 | 3.40E-04 | 3.54E-04 | 47.76 | 15 | 1.11E+06 | 0.10 | 1.04E+01 | 3.64E-04 | 6.15F+02 | 4.57E+200 | 9.74E-06 | 1.085.+01 | N/A | 2.0E-01 |

(-

Appendix C.4

Johnson & Ettinger Model - Results
Inhalation of Votatiles from Groundwater
[Future Child Recreational Scenario - RME
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2

Murphy Waste Oil

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

Incremental

Hazard

| | | Indoor exposure groundwater conc., carcinogen (µg/L) | indoor exposure groundwater conc., noncarcinogen (µg/L) | Risk-based indoor exposure groundwater conc., (µg/L) | Pure component water solubility, S (µg/L) | Final indoor exposure groundwater conc., (µg/L) |
|------------------|---|--|--|---|--|---|
| 71556 | 1.1.1-Trichloroethane | NA NA | l NA | NA. | 1.33E+06 | NA |
| 76131 | Trichloro-1,2,2-triflouroethane, 1,1,2- | NA NA | NA. | NA. | 1.70E+05 | NA. |
| 79005 | 1,1,2-Trichloroethane | NA NA | NA NA | NA. | 4.42E+06 | NA |
| 75343 | 1,1-Dichloroethane | NA NA | NA NA | NA NA | 5.06E+06 | NA. |
| 75354 75354 | 1,1-Dichloroethylene | NA NA | NA NA | NA NA | 2.25E+06 | NA |
| 20821 | 1.2.4-Trichlorobenzene | NA NA | NA. | NA NA | 3.00E+05 | NA |
| 12002 I 95501 | 1.2-Dichlorobenzene | NA NA | NA NA | NA NA | 2.77E+07 | NA. |
| 541731 | Dichlorobenzene, 1,3- | NA NA | NA NA | NA NA | 6.88E+04 | NA. |
| | | | | NA NA | 7.38E+04 | NA NA |
| 106467 | 1,4-Dichlorobenzene | NA NA | NA NA | | 2.23E+08 | NA. |
| 78933 | Butanone, 2- (MEK) | NA NA | NA NA | NA. | 1.00E+09 | NA NA |
| 37 64 1 | Acetone | NA NA | NA NA | NA. | 1.75E+06 | NA NA |
| 71432 | Benzene | NA NA | NA NA | NA NA | 1.75E+07 | NA NA |
| 4839 | Bromomethane | NA | NA | NA NA | 2.67E+06 | NA. |
| 75150 | Carbon Disulfide | NA NA | NA . | NA NA | 4.72E+05 | NA NA |
| 08907 | Chlorobenzene | NA NA | NA | NA | 5.32E+06 | NA NA |
| 5003 | Ethyl Chloride | NA NA | NA | NA | 7.92E+06 | NA NA |
| 7663 | Chloroform | NA NA | NA NA | NA | 3.50E+06 | NA NA |
| 56592 | cis-1,2-Dichioroethylene | NA NA | NA NA | NA | | NA NA |
| 10827 | Cyclohexane | NA NA | NA NA | NA | 5.50E+04 1.69E+05 | NA NA |
| 00414 | Ethylbenzene | NA NA | NA . | NA . | 5.60E+04 | NA NA |
| 8828 | sopropylbenzene | NA NA | NA NA | NA | | NA NA |
| 08872 | Methyl cyclohexane | NA | NA NA | NA NA | 1.40E+04 | |
| 634044 | Methyl-Tertiary-Butyl Ether | NA NA | NA | NA NA | 5.10E+07 | NA NA |
| 5092 | Methylene chloride | NA NA | NA NA | NA | 1.30E+07 | NA |
| 27184 | Tetrachloroethylene | NA | NA NA | NA NA | 2.00E+05 | NA. |
| 08883 | Totuene | NA NA | NA NA | NA. | 5.26E+05 | NA |
| 56605 | trans-1,2-Dichloroethylene | NA NA | NA. | NA | 6.30E+06 | NA |
| 9016 | Trichloroethylene | NA NA | NA | NA | 1.10E+06 | NA NA |
| 5014 | Vinyl chloride | NA NA | NA. | NA NA | 2.76E+06 | NA |
| 330207 | Xylenes | NA NA | NA | NA | 2,20E+05 | NA NA |
| 8862 | Acetophenone | NA NA | NA NA | NA | 6,13E+06 | NA |
| 1203 | Naphthalene | NA NA | NA NA | NA | 3.10E+04 | NA |
| 1576 | Methylnaphthalene, 2- | NA NA | NA | NA | 2.46E+04 | NA |
| 2524 | Biphenyl, 1,1'- | NA NA | NA NA | NA | 6.94E+03 | NA |
| 83680 | Acenaphthylene | NA NA | NA | NA | 3.93E+03 | NA |
| 3329 | Acenaphthene | NA NA | NA | NA | 4.24E+03 | NA |
| 6737 | Fluorene | NA NA | NA NA | NA | 1.90E+03 | NA |
| 5018 | Phenanthrene | NA NA | NA | NA NA | 1.28E+03 | NA |
| 20127 | Anthracene | NA | NA NA | NA . | 4.34E+01 | NA |
| 9-C18 | C9-C18 Aliphatics | NA NA | NA | NA | 1.00E+D4 | NA. |
| 11-C22 | C11-C22 Aromatics | NA NA | NA NA | NA. | 5.80E+06 | NA NA |
| C5-CB | C5-CB Aliphatics | NA | NA . | NA | 1.10E+07 | NA |
| C9-C10 | C9-C10 Aromatics | NA NA | NA NA | NA | 5.10E+07 | NA NA |
| C9-C12 | C9-C12 Aliphatics | NA | NA NA | NA | 7.00E+04 | NA |

| Incremental | Hazard |
|--------------|---------------|
| risk from | quotient |
| vapor | from vapor |
| intrusion to | intrusion to |
| indoor air, | indoor air. |
| carcinogen | noncarcinogen |
| (unitless) | (unitless) |
| NA NA | 2.1E-06 |
| NA NA | NA NA |
| NA NA | NA NA |
| | |
| NA NA | 4.2E-06 |
| NA NA | 7.0E-06 |
| NA | NA . |
| NA NA | NA |
| NA NA | NA . |
| NA . | ŅA |
| NA NA | NA . |
| NA | NA NA |
| 1.2E-10 | 6.2E-06 |
| NA NA | 1.1E-05 |
| NA . | NA |
| NA | 2.6E-07 |
| NA NA | 2.7E-07 |
| NA | NA NA |
| NA NA | 7.6E-05 |
| NA NA | NA |
| NA | 2.4E-07 |
| NA . | NA |
| NA | 9.3E-06 |
| NA NA | NA NA |
| 8.2E-12 | 6.8E-08 |
| 2.8E-10 | NA NA |
| NA NA | 1.3E-06 |
| NA | 5.2E-06 |
| NA | 4.1E-05 |
| 2.7E-08 | 3.5E-04 |
| . NA | · NA |
| NA | NA |
| NA NA | 4.7E-06 |
| NA NA | 1.5E-05 |
| NA NA | NA |
| NA | NA . |
| NA NA | NA |
| NA NA | NA |
| NA . | 2.0E-06 |
| NA NA | NA |
| NA | 3.7E-02 |
| NA | 3.0E-05 |
| NA | 3.5E-03 |
| NA. | 5.3E-05 |
| NA | 1.2E-03 |
| | |

| | 95% UCL | | |
|--------|---------|---------------|---------|
| | Cancer | 95% UCL | |
| | Risk | HI | _ |
| TOTAL: | 3E-08 | 4E-02 |] |
| _ | | | = |
| | | = Cancer risk | > 1E-05 |
| _ | • | or HQ/HI>1E | ⊦00 |

END

| Inhalation of Volation Future Child Recrea | Model - Data Entry Screen se from Groundwater atonal Scenario - CT s. Wells GSH Superfund She, Operable | Unit 2 | | | | | | | . | , | | | | | | | | | |
|---|--|---------------------------|----------------------------------|----------------------|--------------------|---------------------|--|---|---------------------------------------|---------------------------|----------------------------------|----------------------|--|----------------------|-----------------------------|-----------------------|------------------------|---------------------|---------------------|
| CALCULAYE RUSK | BASED GROUNDWATER CONCENT | FRATION (enter "X" in "YE | ES* box) | | | | | | | | | | | | | | | | |
| | YE3 | | | | | | | | | | | | | | | | | | |
| CALCULATE INGR | OR REMENTAL RUSKS FROM ACTUAL GR | OUNDWATER CONCEN | NTRATION | | | | | | | | | | | | | | | | |
| (enter "X" in "YES" | box and initial croundwater conc. below) | | | | | | | | | | | | | | | | | | |
| | YES X | | ENTER Depth | ENTER | ENTER | ENTER | ENTER | ENTER | | | | | | | | | | | |
| ENTER | | ENTER | below grade | | | Average | Vadose zone | Lieer-defined | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER |
| Chemical | | 95% UCL aroundwater | in bottom of enciosed | Deoth below grade | SC5 | orandwater tall | SCS eoil type | vadose zone soil vapor | Vadose zone soil dry | Vadosa zone soil total | Vacces zone soil water-(illed | Torport right for | Terget hazerd outsitent for | Averaging breator | Averaging | | | | |
| CAS No. (numbers only, | | conc., | space Roor, | to water table. | eoil (vpe | temperature, | (used to estimate | OR permeability, | bulk density, | porosity, | porosity, | carcinogens, | noncarcinogena. | carcinogens, | time for noncarcinogens, | Exposure duration, | Exposure frequency, | factoriums tinve | Coversion factor |
| no dimber | Chemical | رسي. (سي⊄ر) | L _e (15 or 200 cm) | LWT (cm) | directly above | T. ("C) | eall yepar | Note (om²) | , , , , , , , , , , , , , , , , , , , | , AV | و <u>ب</u> | TR | THO | AT _c | AT _{NC} | ED | EF | €T | CF |
| | | | | | water table | (0) | permeability) | Note (cm²) | (g/cm²) | (unidess) | (cm²/cm²) | (unitiess) | (unitiess) | (yre) | (986) | (VF) | (Ceye/yr) | (hts/day) | (hravyr) |
| 71556 76131 | 1.1.1-Trichlorosthere Trichloro-1.2.2-Iriflourosthere, 1.1.2- | 5.27E+01 | 15 | 62.78 62.78 | LS | 10 | LS | 1 | 15 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 79005 75343 | 1,1,2-Trichloroethane | | 15 | 62.78 | L\$ ĻS | 10 | LS LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-08 | | 70 | 2 2 | 2. | 26 | 2.5 | 8760 8760 |
| 75354 | 1.1-Dichteroethere 1.1-Dichteroethere | 7,24E+01 9,00E+00 | 15 | 62,78 | LS LS | 10 | LS LS | 1 | 1.5 | 0.43 | 03 | 1.0E-06 | 1 | 70 | 2 | ž | 26 | 2.8 | 5760 |
| 120821 | 1,2,4-Trichiorobenzene | | 15 | 52,78 | LS | 10 | LS. | | 1.5 | 0,43 | 03 | 1.0E-06 | 1 | 70 70 | 2 | 2 2 | 26 | 2.5 | 8760 8760 |
| 541731 | 1,2-Dichlorobenzene Dichlorobenzene, 1,3- | 1.00E+00 | 15 | 62.78 62.78 | LS LS | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 | 2 | 2 | 26 | 2.5 | 5700 |
| 106467 78933 | 1,4-Dichlorobenzene | | . 15 | 52.78 | LS | 10 | LS | 1 | 1.5 | 0.43 | 03 | 1 QE-08 | 1 | 70 70 | - 2 | 2 | 26 28 | 2.5 | 8760 8760 |
| 67641 | Butenone, 2: (MEK) Acetone | 2.42E+01 | 15 15 | 62.76 62.78 | LS LS | 10 | LS LS | - 1 | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 71432 74839 | Benzene | 6.54E+00 | 15 | 62.78 | LS | 10 | ĻŞ | 1 | 1.5 | 0.43 | 0.3 | 1 DE-06 | | 70 | 2 | 2 | 26 | 25 | 8760 8760 |
| 75150 | Bromomethene Carbon Disuffice | 1.00E+00 | 15 15 | 52.78 62.78 | ĻS Ļ\$ | 10 | LS LS | | 1,5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 70 | 2 | | 26 | 2.5 | 5760 |
| 106907 75003 | Chlorobenzene Ethyl Chloride | 1,00€+00 | 15 | 62 76 | LS | 10 | LS | 1 | 1,5 | 0.43 | 0.3 | 105-06 | 1 1 | 70 | - 4 | . 2 | 26 | 2.5 | 5760 5760 |
| 67663 | Chloroform | 3,05E+01 | 15 15 | 52 78 52 78 | LS LS | 10 | LS LS | + | 1.5 | 0.43 | 0.3 | 1 0E-06 1,0E-06 | 1 | 70 70 | 2 | 3 | 26 | 2.5 | 8760 8760 |
| 166592 110627 | cie-1,2-Dichicroethylene Cyclohexane | 7.43E+02 | 15 15 | 62.78 62.78 | LS | 10 | LS | | 1,5 | 0.43 | 0.3 | 1.0E-09 | L | 70 | 2 | 2 | 26 | 2.6 | 8760 |
| 100414 96828 | Ethylograpia | 7.61E+00 | 15 | 62 7B | LS LS | 10 | LS LS | ' | 1,5 | 0.43 | 0.3 | 1.0E-06 | | 70 70 | | 2 | 26 26 | 25 25 | 8760 8760 |
| 108872 | Methyl cyclohexene | 7.00E+00 | 15 16 | 62,78 62.78 | LS LS | 10 | LS | 1 | 1,5 | 0.43 | 0.3 | 1.05-06 | | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 1634544 76092 | Methyl-Temery-Butul Ether | | 15 | 52.78 | <u> </u> | 10 | LS LS | | 1.5 1.5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | 1 1 | 70 70 | <u>2</u> | - 3 | 26 26 | 2.5 | 8760 8760 |
| 127184 | Methylana chlorida Tetrachlorositylona | J.59E+01 7.00E+00 | 15 15 | 62.78 62.78 | LS LS | 10 | LS LS | 1 | 1.5 | 0.43 | 0.1 | 1.0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 108883 156605 | Toluene | 1.71E+01 | 15 | 62,78 | L8 | 10 | Ī.S | 1 | 1,5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | | 70 | 2 2 | 2 | 26 26 | 2.5 | 8760 8760 |
| 79016 | Fare-1.2-Okthorosthylene Yrichlorosthylene | 1.26E+01 J.31E+01 | 15 15 | 62.78 62.78 | LS LS | 10 | LS LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 | 70 70 | 2 | 2 | 26 | 26 | 8760 |
| 75014 1330207 | Virvi chloride Xylenes | 1,85E+02 | 15 15 | 52.78 | L3 | 10 | | 1 | 1.5 | 0.43 | 0.3 | 1,05-06 | | 70 | 2 | 2 | 26 | 25 | 8760 8760 |
| 98862 | Acerophenone | | 15 | 62.78 62.78 | LS LS | 10 | LS LS | 1 | 15 | 0.43 | 0.3 0.3 | 1.0E-06 1.0E-06 | 1 | 70 70 | 2 | . 2 | 26 | 2.5 | 8760 8760 |
| 91203 91676 | Nachtralane Metrykraphthylene, 2- | 9.09E+00 5.69E+00 | 15 15 | 62.78 62.78 | LS LS | 10 | įs. | 1 | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 87(x) |
| 92524 208968 | Bohand, 1,1 | 3 0#g+yo | 15 | 62.78 | LS . | 10 | LS LS | 1 | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 70 | - 2 | 2 | 28 | 2.5 | 8760 8760 |
| 83329 | Acenephthylene Acenephthene | | 15 15 | 62.78 62.78 | La | 10 | LS | 1 | 1.6 | 0 43 | 0.1 | 1,06-06 | 1 1 1 | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 86737 85018 | Fluorene | | 15 | 82.78 | LS | 10 10 | LS LS | | 1,5 | 0.43 0.43 | 0.3 | 1,0E-06 1,0E-06 | 1 1 | 70 | 2 | 2 | 26 | 2.6 | 8760 8760 |
| 120127 | Phonenthrone Anthrocene | 5,74€+00 | 15 15 | 62,78 62,78 | 15 | 10 | LS | | 1,5 | 0.43 0.43 | 0,3 | 1,05-06 | , | 70 | 2 | 7 | 26 | 2.5 | 8780 |
| C9-C18 C11-C22 | CS-C18 Aliphates | 9.51E+02 | 15 | 62.78 | LS LS | 10 | L8 LS | ~ } | 1.5 | 0.43 | 0.3 | 1,05-06 1,05-06 | | 70 70 | 2 | 2 | 26 | 26 | 8760 8760 |
| C5-C6 | C11-C27 Aromatica C5-C8 Allphalica | 4,19E+02 1,15E+02 | 15 15 | 62.78 52.78 | LS LS | 10 | LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | | .70 | . 2 | 2 | 26 | 2.5 | 8760 |
| C9-C10 C9-C12 | C9-C10 Aromatica | 7.18E+01 | 15 | 52.76 | LS | 10 | LS LS | <u>i </u> | 1.6 | 0.43 | 0.3 | 1.0E-06 1,0E-06 | 1 1 | 70 | | 2 | 26 | 2.5 | 8760 8760 |
| Note: | CB-C12 Allehatica | 3,30E+01 | 15 | 52.73 | LS | 10 | L8 | 1 | 1.5 | 0.43 | D.3 | 1.05-06 | L. 1 | 70 | Ž | ž | 26 | 26 | 8760 |
| 1) Default soil perer | maters from table 7 of User's Guide for E | voluning Subaurlace Vap | or Introdion Into Building (| U.S. EPA June 19 | 1, 2003) were used | for eal water (tipe | porovity (6 ₄₄), and organ | ic carbon fraction (f _m) | , soil lotal porceit | y (n), and soil dry | bulk density (p _e). | | | | | | | | |

Appendix C.4
Johnson & Ettinger Model - Chemical Properties Screen
Inhalation of Volatiles from Groundwater
Future Child Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oli

| Chemical CAS No. | Chemical | Diffusivity in air, D _a (cm ² /s) | Diffusivity in water, D _w (cm ² /s) | Henry's law constant at reference temperature, H (atm-m³/mol) | Henry's law constant reference temperature, T _R (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, T _B (°K) | Critical temperature, T _C (°K) | Organic carbon partition coefficient, K_{∞} (cm 3 /g) | Pure component -water solubility, S (mg/L) | Unit risk factor, URF (µg/m³) ⁻¹ | Reference conc., RfC (mg/m³) |
|---------------------|-------------------------------------|--|--|--|--|--|---|--|---|---|---|---------------------------------------|
| | | | | | | | | | | | | |
| 71556 | 1,1,1-Trichloroethane | 7.80E-02 | 8.80E-06 | 1.72E-02 | 25 | 7,136 | 347.24 | 545.00 | 1,10E+02 | 1,33E+03 | N/A | 2.2E+00 |
| 76131 | Trichloro-1,2,2-triflouroethane, 1, | | 8.07E-06 | 5.17E-01 | 25 | 1,326 | 320.70 | 481.05 | 2.25E+02 | 1.70E+02 | N/A | 3.0E+01 |
| 79005 | 1,1,2-Trichloroethane | 7.80E-02 | 8.80E-06 | 9.12E-04 | 25 | 8,322 | 386.15 | 602.00 | 5.01E+01 | 4.42E+03 | 1.6E-05 | 2.2E+00 |
| 75343 | 1,1-Dichloroethane | 7.42E-02 | 1.05E-05 | 5.61E-03 | 25 | 6,895 | 330,55 | 523.00 | 3.16E+01 | 5.06E+03 | N/A | 5.0E-01 |
| 75354 | 1,1-Dichloroethylene | 9.00E-02 | 1.04E-05 | 2.61E-02 | 25 | 6,247 | 304.75 | 576.05 | 5.89E+01 | 2.25E+03 | N/A | 2.0E-01 |
| 120821 | 1,2,4-Trichlorobenzene | 3.00E-02 | 8.23E-06 | 1.42E-03 | 25 | 10,471 | 486.15 | 725.00 | 1.78E+03 | 3.00E+02 | N/A | 2.0E-01 |
| 95501 | 1,2-Dichlorobenzene | 6.88E-02 | 9.41E-06 | 1.62E-06 | 25 | 1,223 | 465,00 | 697.50 | 5.34E+01 | 2.77E+04 | N/A | N/A |
| 541731 | Dichlorobenzene, 1,3- | 4.14E-02 | 8.85E-06 | 4.70E-03 | 25 | 1,242 | 446.00 | 683.96 | 1.70E+02 | 6.88E+01 | N/A | N/A |
| 106467 | 1,4-Dichlorobenzene | 6.90E-02 | 7.90E-06 | 2.43E-03 | 25 | 9,271 | 447.21 | 684.75 | 6.17E+02 | 7,38E+01 | N/A | 8.0E-01 |
| 78933 | Butanone, 2- (MEK) | 8.08E-02 | 9.80E-06 | 5.60E-05 | 25 | 1,311 | 352.50 | 528.75 | 3.83E+00 | 2.23E+05 | N/A | N/A |
| 67641 | Acetone | 1.24E-01 | 1.14E-05 | 3.88E-05 | 25 | 6,955 | 329.20 | 508.10 | 5.75E-01 | 1.00E+06 | N/A | N/A |
| 71432 | Benzene | 8.80E-02 | 9.80E-06 | 5.56E-03 | 25 | 7,342 | 353.24 | 562,16 | 5.89E+01 | 1.75E+03 | 7.8E-06 | 3.0E-02 |
| 74839 | Bromomethane | 7.28E-02 | 1.21E-05 | 6.22E-03 | 25 | 1,362 | 276.50 | 414.75 | 1.43E+01 | 1.52E+04 | N/A | 5.0E-03 |
| 75150 | Carbon Disulfide | 1.04E-01 | 1.29E-05 | 1.27E-02 | 25 | 6,391 | 319.00 | 552.00 | 5.14E+01 | 2.67E+03 | N/A | 7.0E-01 |
| 108907 | Chlorobenzene | 7.30E-02 | 8.70E-06 | 3,71E-03 | 25 | 8,410 | 404.87 | 632.40 | 2.19E+02 | 4.72E+02 | N/A | 6.0E-02 |
| 75003 | Ethyl Chloride | 1.26E-01 | 6.50E-06 | 8.67E-03 | 25 | 1,355 | 249.00 | 373,50 | 1.43E+01 | 5.32E+03 | N/A | 1.0E+01 |
| 67663 | Chloroform | 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 6,988 | 334.32 | 536.40 | 3.98E+01 | 7.92E+03 | 2.3E-05 | 5.0E-02 |
| 156592 | cis-1,2-Dichloroethylene | 7,38E-02 | 1.13E-05 | 4.07E-03 | 25 | 7,192 | 333.65 | 544.00 | 3.55E+01 | 3.50E+03 | N/A | 2.0E-01 |
| 110827 | Cyclohexane | 8.00E-02 | 9.00E-06 | 2.00E+00 | 25 | 1,309 | 353.85 | 530.78 | 1,60E+02 | 5.50E+01 | #N/A | #N/A |
| 100414 | Ethylbenzene | 7.50E-02 | 7.80E-06 | 7.88E-03 | 25 | 8,501 | 409.34 | 617.20 | 3.63E+02 | 1.69E+02 | N/A | 1.0E+00 |
| 98828 | Isopropylbenzene | 6.50E-02 | 7.83E-06 | 1.47E-02 | 25 | 1,259 | 425.40 | 631.01 | 9.31E+03 | 5.60E+01 | N/A | 4.0E-01 |
| 108872 | Methyl cyclohexane | 9.86E-02 | 8.52E-06 | 4.23E-01 | 25 | 1,296 | 373.90 | 560.85 | 2.68E+02 | 1.40E+01 | N/A | 3.0E+00 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1.02E-01 | 1.05E-05 | 5.87E-04 | 25 | 1,324 | 328.36 | 497.11 | 3.84E+01 | 5.10E+04 | N/A | 3.0E+00 |
| 75092 | Methylene chloride | 1.01E-01 | 1.17E-05 | 2.19E-03 | 25 | 6.706 | 313.00 | 510.00 | 1.17E+01 | 1.30E+04 | 4.7E-07 | 3.0E+00 |
| 127184 | Tetrachloroethylene | 7.20E-02 | 8.20E-06 | 1.84E-02 | 25 | 8,288 | 394.40 | 620.20 | 1,55E+02 | 2.00E+02 | 5.9E-06 | N/A |
| 108883 | Toluene | 8.70E-02 | 8,60E-06 | 6.63E-03 | 25 | 7,930 | 383.78 | 591.79 | 1.82E+02 | 5.26E+02 | N/A | 4.0E-01 |
| 156605 | trans-1,2-Dichloroethylene | 7.07E-02 | 1.19E-05 | 9.39E-03 | 25 | 1,333 | 320.85 | 516.50 | 5.25E+01 | 6.30E+03 | N/A | 2.0 E- 01 |
| 79016 | Trichloroethylene | 7.90E-02 | 9.10E-06 | 1,03E-02 | 25 | 7,505 | 360,36 | 544.20 | 1.66E+02 | 1,10E+03 | 1.1E-04 | 4.0E-02 |
| 75014 | Vinyl chloride | 1.06E-01 | 1.23E-05 | 2.71E-02 | 25 | 5,250 | 259.25 | 432.00 | 1.86E+01 | 2,76E+03 | 8.8E-06 | 1.0E-01 |
| 1330207 | Xvienes . | 7.69E-02 | 8.44E-06 | 6,73E-06 | 25 | 1,264 | 417.40 | 616.21 | 2.41E+02 | 2,20E+02 | N/A | 1.0E-01 |
| 98862 | Acetophenone | 6.00E-02 | 8.73E-06 | 1.02E-05 | 25 | 1,214 | 475.00 | 712.50 | 4.62E+01 | 6.13E+03 | N/A | N/A |
| 91203 | Naphthalene | 5.90E-02 | 7.50E-06 | 4.83E-04 | 25 | 10,373 | 491.14 | 748.40 | 2.00E+03 | 3.10E+01 | N/A | 3.0E-03 |
| 91576 | • | 4.84E-02 | 7.75E-06 | 1.01E-03 | 25 | 1,169 | 514.05 | 761.01 | 8.51E+03 | 2.46E+01 | N/A | 3.0E-03 |
| 92524 | Methylnaphthalene, 2- | 4.04E-02 | 8.15E-06 | 3.03E-04 | 25 | 1,149 | 529.10 | 793.65 | 6.25E+03 | 6.94E+00 | N/A | N/A |
| 208968 | Biphenyl, 1,1'- | 4.43E-02 | 7.44E-06 | 2.80E-04 | 25 | 1,118 | 553.00 | 792.01 | 4.79E+03 | 3.93E+00 | N/A | 3.0E-03 |
| | Acenaphthylene | | | 1.55E-04 | 25 | 12,155 | 550.54 | 803.15 | 7.08E+03 | 4.24E+00 | N/A | 3.0E-03 |
| 83329 | Acenaphthene | 4.21E-02 | 7.69E-06 | | | | | | 7.71E+03 | 1.90E+00 | N/A | 3.0E-03 |
| 86737 | Fluorene | 3.63E-02 | 7.88E-06 | 9.41E-08 | 25 | 12,666 | 570.44 | 870.00 | 1.41E+04 | 1.28E+00 | N/A | 3.0E-03 |
| 85018 | Phenanthrene | 3.30E-02 | 7.47E-06 | 1.30E-04 | 25 | 1,057 | 613.00 | 869,01 | | | | |
| 120127 | Anthracene | 3.24E-02 | 7.74E-06 | 6.51E-05 | 25 | 13,121 | 615.18 | 873,00 | 2.95E+04 | 4.34E-02 | N/A | 3.0E-03 |
| C9-C18 | C9-C18 Aliphatics | 6.00E-02 | 1.00E-05 | 1.66E+00 | 25 | NA NA | NA NA | NA NA | 6.80E+05 | 1.00E+01 | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 6.00E-02 | 1.00E-05 | 7.32E-04 | 25 | NA | NA NA | NA | 5.00E+03 | 5.80E+03 | N/A | 5.0E-02 |
| C5-C8 | C5-C8 Aliphatics | 6.00E-02 | 1.00E-05 | 1.30E+00 | 25 | NA NA | NA | NA NA | 2.27E+03 | 1.10E+04 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 6.00E-02 | 1.00E-05 | 7.92E-03 | 25 | NA | NA | NA | 1.78E+03 | 5.10E+04 | N/A | 5.0E-02 |
| C9-C12 | C9-C12 Aliphatics | 6.00E-02 | 1.00E-05 | 1.56E+00 | 25 | NA. | NA | NA | 1,50E+05 | 7.00E+01 | N/A | 2.0E-01 |

Accendix C.4.
Johnson & Ettinger Model - Celculations Screen
Inhelation of Volatiles from Groundwater
Future Child Recreation Scenario - CT
Southwest Prottine, Wells G&H Superkand Ste, Operable Unit 2
Murphy Waste Of

| | Source- building separation, | Vectore zone soli air-filled porcetty, 6_Y | Vadose zone effective toler fluid esturation, 8 | Variose zone soil intrinsic permeability, | Vectose zone soil relative str permeability. | Vadnes zone soli ellective vapor permeability, | Thickness of capillary 2004, | Yotal porosity in capillary zone, | Air-filled porcelly in papillary zone, | Water-filled proteity in capillary zona, | Floor- wai seem penmeter, | Bidg. ventiletion rate. | Area of enclosed space below grade, | Crack- to-total gree ratio, | Creck depth below grade, | Enthaloy of vaponzacion al ave groundweler temperature, | Henry's law constant at over proundwater temperature, | Henry's law constant at r vs. groundwat femperature, |
|---|------------------------------------|--|---|--|--|---|------------------------------|--|---|---|------------------------------------|-------------------------------|---|---------------------------------------|-----------------------------------|--|--|---|
| | (gm) | (cm³/cm³) | (cm²/cm²) | (cm²) | (cm²) | (om²) | , L _{et} | (<u>. </u> | θ | 6 | Xcreck | Charter | Α. | T) | Zook | ΔΗ, 🕶 | H _{TR} | нъ |
| | 1 | 7 | ,, | (2011) | 160.11 | (GH) | (cm) | (cm³/cm³) | (cm³/cm³) | (cm³/cm²) | (crn) | (cm³/s) | (cm²) | (unitiess) | (cm) | (ca/mol) | (alm-m²/mol) | (unitless) |
| 71556 1,1,1-Trichktroethane | 47.70 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | | | | | | · · · · · · · · · · · · · · · · · · · | | | | |
| 76131 Trichicro-1,2,2-triflouroethane, 1,1,2- | 47.76 | 0.130 | 0.659 | 1.62E-05 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+08 | 2.48E-04 | 15 | 7,885 | 8.50E-03 | 3 66E-01 |
| 79005 1,1,2-Trichloroethene | 47.76 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.56E+03 | 6.93E+05 | 2.60E+06 2.60E+06 | 2 48E-04 | 15 | 1,438 | 4.55E-01 | 1.96E+01 |
| 75343 1,1-Dichloroethame | 47.7B | Q.130 | D.659 | 1 62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2 49E-04 2 48E-04 | 15 | 9,572 | 3.88E-04 | 1.67E-02 |
| 75354 1,1-Cichlorouthylane | 17.76 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2 48E-04 | 15 | 7,450 6,392 | 2.88E-03 | 1,24E-01 |
| 120821 1,2,4-Trichloroberusme | 47.78 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 13,230 | 1.47E-02 | 6.34E-01 |
| 95501 1,2-Dichlorobenzene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2 60E+06 | 2.48E-04 | 15 | 1,521 | 1,35E-04 1,41E-06 | 1.87E-02 |
| 541731 Dichlorobenzene: 1,3- | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 5.33E-09 | 18,75 | 0.43 | 0.127 | 0 303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.503 | 4.11E-03 | 6.09E-05 |
| 106467 1,4-Dichlorobenzene | 47,78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 15.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.50E+06 | 2.48E-04 | 15 | 11.243 | 8.89E-04 | 3.83E-02 |
| 78933 Butanone, 2- (MEK) 67641 Apatone | 47.78 | 0.130 | 0.659 | 1.62E-06 | 0 390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0 303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.486 | 4.90E-05 | 2.11E-03 |
| 71432 Benzene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7 559 | 1.97E-05 | 8.50E-04 |
| 74839 Bromometume | 47.78 | D. 130 | 0.659 | 1.52E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6 55E+03 | 6.93E+05 | 2.50E+06 | 2.4BE-04 | 15 | 8,122 | 2.69E-03 | 1.16E-01 |
| 75150 Cerbon Disuffice | 47.78 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,337 | 5.52E-03 | 2.38E-01 |
| 108907 Chlorobenzene | | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 8 93E+05 | 2.60E+06 | 2.48E-04 | 15 | 6.682 | 5.99E-03 | 3.01E-01 |
| 75003 Ethyl Chloride | 47.78 | 0.130 | 0.659 | 1,62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6 55E+03 | 6 93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9.603 | 1.54E-03 | 5.65E-02 |
| 67663 Chkoroform | 47.78 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+05 | 2 48E-04 | 15 | 1,201 | 7.79E-03 | 3.35E-01 |
| 156592 cts-1,2-Dichloroethylene | 47.78 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0,303 | 6.55E+03 | 6 93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.554 | 1.86E-03 | 8.02E-02 |
| 110827 Cycloheosme | 47.78 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7.734 | 2.04E-03 | 8.77E-02 |
| 100414 Ethylbenzene | 47.78 | 0.130 | 0.659 | 1.62E-08 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1.486 | 1.75E+00 | 7.54E+01 |
| 98825 Isopropylbenzene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18 75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 10,155 | 3.18E-03 | 1.37E-01 |
| 108872 Methyl cyclohexene | 47.76 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18 75 | 0 43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,540 | 1 28E-02 | 5.51E-01 |
| 1834044 Methyl-Teclary-Sutyl Ether | 47.76 | 0.130 | 0.559 | 1.62E-08 | 0,390 | 6 33E-09 | 18 75 | 0 43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,505 | 3.70E-01 | 1.59E+01 |
| 75092 Methylene chloride | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18 75 | 0.43 | 0 127 | 0.303 | 6.55E+03 | 6.93E+05 | 2,60E+06 | 2.48E-04 | - 5 | 1,447 | 5 16E-04 | 2.22E-02 |
| 127184 Tetrachioroethylene | 47.76 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 6.33E-09 | 18 75 | 0.43 | 0 127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 7,034 | 1.17E-03 | 5.03E-02 |
| 108883 Tokyene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 18.75 | 0.43 | 0 127 | 0.303 | 6.55E+03 | 6.93E+05 | 2 60E+06 | 2,45E-04 | 15 | 9,553 | 7.83E-03 | 3.37E-01 |
| 156905 trans-1,2-Dictrionasthylane | 47.78 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6 55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 9,154 | 2 92E-03 | 1.26E-01 |
| 79018 Trichicroethylane | 47.78 | 0.530 | 0.659 | 1 62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 8.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,417 | 8 27E-03 | 3.56E-01 |
| 75014 Vinyl chloride | 47.78 | 0.130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0 127 0 127 | 0,303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | B,557 | 4 79E-03 | 2,06E-01 |
| 1330207 Xylenes | 47.78 | 0 130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 6.55E+03 | 6 93E+05 | 2.60E+06 | 2.48E-04 | 15 | 5,000 | 1.73E-02 | 7.46E-01 |
| 98662 Acetophenone | 47.75 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55F+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,542 | 5.86E-06 | 2.52E-04 |
| 91203 Naphthalene | 47,76 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 6.93E+05 | 2.60E+06 2.60E+06 | 2 48E-04 | 15 | 1,518 | 8.91E-06 | 3.83E-04 |
| 91576 Methylhaphthalene, 2- | 47.78 | 0.130 | 0.659 | 1 62E-08 | 0.390 | 6.33F-09 | 16.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 5.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 12,913 | 1.52E-04 | 6.55E-03 |
| 92524 Biphenyl 1 1'- | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | D.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,506 | 6.66E-04 | 3.81E-02 |
| 208968 Aceruphthylene | 47.78 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | D43 | 9.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | 1,472 | 2,66E-04 | 1.14E-02 |
| 83329 Acenaphthere | 47.78 | 0 130 | 0.659 | 1.62E-05 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.45E-04 | 15 | 1,513 | 2.45E-04 | 1.05E-02 |
| 96737 Fluorene | 47,78 | 0.130 | 0.659 | 1.52E-08 | 0.390 | 5.33E-09 | 18 75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2 48E-04 2 48E-04 | 15 | 16,123 | 3.67E-05 | 1.58E-03 |
| 85018 Phenenthrene | 47,78 | 0.130 | 0.659 | 1.52E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | D 127 | 0.303 | 6.55E+03 | 5.93E+05 | 2.60E+06 | 2.48E-04 | | 16,235 | 2 20E-08 | 9.48E-07 |
| 120127 Anthracene | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 8.55E+03 | 6.93E+05 | 2.60E+06 | Z.48E-04 | 15 | 1,479 18,353 | 1.14E-04 | 4.90E-03 |
| C9-C18 C9-C18 Alphatics | 47.78 | D. 130 | 0,659 | 1.62E-08 | 0.390 | 6.33E-09 | 15.75 | 0.43 | 0.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.45E-04 | 15 | 18,353 NA | 1.28E-05 | 5.43E-04 |
| C11-C22 C11-C22 Aramatics | 47.76 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.003 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | | | B.28E-01 | 3 55E+01 |
| C5-C8 C5-C8 Aliphatics | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | D.127 | 0.303 | 6.55E+03 | 6.93E+05 | 2.60E+06 | 2.48E-04 | 15 | NA NA | 3 60E-04 | 1.55E-02 |
| C9-C10 C9-C10 Aromatics | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | D 127 | 0.303 | 6.55E+03 | 6.93E+05 | 2 60E+06 | 2.48E-04 | 15 | NA NA | 6.48E-01 | 2.79E+01 |
| C9-C12 C9-C12 Allphalics | 47.78 | 0.130 | 0.659 | 1.62E-08 | 0 390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.000 | 6 55E+03 | 6.93E+05 | | 2 48E-04 | 15 | NA NA | 3,96E-03 7,50E-01 | 1.70E-01 3.35E+01 |

Ĺ

Appendix C.4
Johnson & Ettinger Model - Calculations Screen
Inhibitation of Vocatiles from Groundwater
Future Child Recreational Scenario - CT
Southwest Presides, Wells G&H Suberfund Ste, Open
Murphy Waste Oil

| 1355 1.1. | | Vapor viscosity at mes, soil temperature, Pre- | Vadore zane effective chrusion coefficient, D ^{rai} v | Capitary 2014 effective diffusion coefficient, D ^M | Total cversil effective diffusion coefficient, | Diffusion eath tempth, | Convection path length, L _a | Source vepor cons., C _{essoo} | Crack radius, ruma | Average Vapor flow rate into bidg., | Creck effective diffusion conficient | Area of crack, A _{crea} | Exponent of equivalent foundation Peolet number, exp(Pe ⁶) | Infinite source indoor attenuation coefficient | Infinite source bidg, sons, Guess | Unik risk fæstor, URF | Reference conc., RIC |
|--|---|--|--|--|--|------------------------------|---|---|--------------------------|--|--------------------------------------|--|---|--|---|--------------------------------|----------------------------|
| Property | | (g/cm-s) | (cm²/s) | (om²/e) | (cm²/s) | (em) | (cm) | <u> (μο/m²)</u> | (u m) | (cm³/s) | (cm²/s) | (⊂ m*) | (unitiess) | (unifiess) | (µp/m³) | (μg/m³) ⁻¹ | (mg/m ⁻) |
| Military 1986 198 | 71555 1,1,1-Trichloroethane | 1.75E-04 | 4.75E-04 | 4.455-04 | 4.63E-04 | 47.78 | 16 | 102EANA | 0.40 | Lanciati | . 200 | | | | | , | |
| Proceedings | 76131 Trichloro-1,2,2-triflourouthane, 1,1,2- | 1.75E-04 | | | | | | | | | | | | | | | |
| Table 1.75 | 79005 1,1,2-Trichkoroethene | 1,75E-04 | 5.24E-04 | | | | | | | | | | | | | | |
| 1785 1.500 1.700 | 75343 1,1-Dichloroethane | 1,75E+04 | | | | | | | | | | | | | | | |
| 1786-04 2786-04 2786-04 2786-04 2778 15 | 75354 1,1-Dichloroeth/iene | 1,75E-04 | | | | | | | | | | | | | | | |
| Property 1.75 Property | | 1.75E-04 | | | | | | | | | | | | | | | |
| March Marc | 95501 1,2-Dichlorobenzene | 1.75E-04 | | | | | | | | | | | | | | | |
| 1756-04 4,906-04 4,906-04 4,906-04 4,906-04 4,906-04 4,778 15 1778 15 1778 1 | 541731 Dichlorobenzene, 1,3- | 1.75E-04 | | | | | | | | | | | | | | | |
| Process | 106487 1,4-Dichlorobenzene | 1.75E-04 | | | | | | | | | | | | | | | |
| 1785-04 1785 | 78933 Butenone, 2- (MEK) | 1.755-04 | | | | | | | | | | | | | | | |
| 74639 [Promoreshare 1,756-04 4,466-04 4,196-04 4,326-04 4,778 15 7,376-62 0,10 1,066-01 3,486-04 3,478 1,776 1,778 | | 1.75E-04 | | | | | | | | | | | | | | | |
| 745-09 Personnehme | | 1.75E-04 | 5.42E-04 | | | | | | | | | | | | | | |
| 73150 Centro (Busides) 178E-04 6. MEA 59E-04 177E-04 1. MED 4. 177 | 74839 Bromomethane | 1.75E-04 | | | | | | | | | | | | | | | |
| 1786-04 1786-04 1786-04 1786-04 1786-04 1778 15 6,855-04 0.10 105-04 0.455-04 | | 1.75E-04 | | | | | | | | | | | | | | | |
| 7503 Erw Chipride 7,550-04 7,5 | | 1.75E-04 | | | | | | | | | | | | | | | |
| 67663 [Chevalorim 1.78C-04 4.58C-04 6.29C-04 6.29C-04 7.78 15 1.58C-04 1.58C-04 4.58C-04 4.58C-04 4.38C-04 4.38C-04 4.78C-04 7.78 15 6.29C-04 6.29C-04 6.28C-04 7.88C-04 | | 1.75E-04 | | | | | | | | | | | | | | | |
| 1,0027 Cochespore | | | | | | | | | | | | | | | | | |
| 10027 Cyclohaman | 155592 cls-1,2-Dichloroethylene | 1.75E-04 | | | | | | | | | | | | | | | 5.0E-02 |
| 175E-04 450E-04 450E | f10827 Cyclohecune | | | | | | | | | | | | | | | | |
| 98020 Isparruphiamane 1,75E-04 3,95E-04 3,77E-04 3,95E-04 4,778 19 Industry 1,04E-021 1,04E-02 | 100414 Ethythenzane | | | | | | | | | | | | | | | | |
| 158904 Methyl Frishing-RUM (Steff) 1.75E-04 5.98E-04 5.58E-04 5.58E-04 6.778 15 1.77E-05 0.10 1.04E-01 5.98E-04 6.75E-02 6.95E-05 1.75E-05 1.75E-05 1.75E-05 6.95E-04 6.778 15 1.77E-05 0.10 1.04E-01 5.97E-04 6.45E-02 2.47E-015 1.75E-05 1.75E-0 | 98828 letpropylbenzene | | | | | | | | | | | | | | | | 1.0E+00 |
| 155044 Methyler chistory 1,755-04 6,756-04 5,856-04 5,856-04 5,856-04 6,78 15 15 NA 0.10 1,046-01 5,866-04 6,856-02 2,166-05 NA NA 3,060-01 1,756-04 1,756-0 | 106872 Methyl pycichecene | | | | | | | | | | | | | | | | 4.0E-01 |
| Total Methyleme 1,755-04 0,385-04 0,185-04 | 1634044 Methyl-Terbary-Butyl Ether | | | | | | | | | | | | | | | | 3.0E+00 |
| 175E-04 175E | 75092 Methylene chloride | | | | | | | | | | | | | | | | 3.0E+00 |
| 198605 Tobarre 1.75E-04 5.3E-04 5.00E-04 5. | 127184 Tetrachiorpethylene | | | | | | | | | | | | | | | | 3.0E+00 |
| 19665 Street 1_2 Chickrosthylane | 108863 Toluene | | | | | | | | | | | | | | | 5.9E-06 | N/A |
| 79016 Trothkrustrytem | 156605 trans-1,2-Dichlorostrylana | | | | | | | | | | | | | | | | 4.0E-01 |
| 75014 Vml chloroide | 79016 Trichlorouthylene | | | | | | | | | | | | | | | | 2.0E-01 |
| 130027 Memory 1,755-04 1, | | | | | | | | | | | | | | | | | 4.0E-02 |
| 95002 Acetophenora | | | | | | | | | | | | | | | 1.59E+00 | 8.6E-06 | 1,0E-01 |
| 31(20) Ng/hythere | 98862 Acetophenone | | | | | | | | | | | | | | N/A | N/A | 1.0E-01 |
| 91576 Methywapthalana, 2. 1756-04 3.18C-0 2.86C-0 47.78 15 3.86C-0 1.04E-01 3.18C-0 6.45E-02 2.86C-0 1.06E-03 3.38C-0 1.04E-01 3.18C-0 6.45E-02 3.86C-0 1.04E-01 3.18C-0 1.04E-01 3.04E-0 1.04E-0 | | | | | | | | | | | | | | | | | NA |
| 92524 Biptomy, 1,1"- 1756-04 3.196-04 3.016-04 3.096-04 4.778 15 N/A 0.10 1.046-01 3.196-04 6.456-02 8NAM 9.276-06 N/A N/A 3.06-05 N/A N/A 3.0 | | | | | | | | | | | | | | | | N/A | 3.0E-03 |
| 2005002 Assemble 1,755-04 3,398-04 3,285-04 3,318-04 4,778 16 NA 0.10 1,048-07 3,185-04 6,455-02 MA,MH 9,575-06 NA NA NA NA NA NA NA N | 92524 Biohemi 1 1'- | | | | | | | | | | | | | | 2,07E-03 | NA | 3.0E-03 |
| State | | | | | | | | | | | | | | | | N/A | N/A |
| 8973/ Paperthrians 1.79E-04 8.16E-01 3.00E-01 8.6E-01 4.76 15 6VA 0.10 100E-01 7.30E-04 6.45E-02 1.30E-143 1.19E-05 N/A V/A 3.0E-01 5.50E-01 100E-01 7.30E-04 6.45E-02 1.30E-01 5.40E-05 N/A N/A 3.0E-01 5.50E-01 100E-01 7.30E-04 6.45E-02 1.30E-01 5.40E-05 N/A N/A 3.0E-01 100E-01 7.30E-04 100E-01 7.30E-04 1.0E-01 7.30E-04 1.20E-01 7.30E-04 1.20E-01 7.30E-04 1.20E-01 7.30E-04 1.20E-01 7.30 | 83329 Acenerations | | | | | | | | | | | | | | N/A | N/A | 3.0E-03 |
| 65/18 Physicityres 17E-04 3.55-04 3.65-04 3.65-04 47.78 15 0.70 1.04-01 5.65-01 6.45-02 1.36-00 5.65-02 1.36-00 0.10 1.04-01 1 | | | | | | | | | | | | | | | | N/A | 3.0E-03 |
| 130127 Arthresine | | | | | | | | | | | | | | | | | 3.0E-03 |
| C2-C16 C2-C16 Alphatics 1,755-C4 3,045-C4 3,045-C4 1,055-C4 3,055-C4 2,055-C4 2,055- | | | | | | | | | | | | | | | Z 72E-04 | NA | 3.0E-03 |
| G11-G22 D11-G22 Armelés 1,755-04 3,955-04 4,778 15 3,395-07 0.10 1,045-01 3,645-04 6,455-02 4,085-28 19,055-05 18,055-02 N/A 2,055-05 19 | | | | | | | | | | | | | | | | N/A | 3.0E-03 |
| C5-C5 C5-C5 Alphasido 1.75E-04 3.6E-04 3.6E-04 47.78 15 6.45E-03 0.10 1.04E-01 4.27E-04 6.45E-02 7.32E-245 1.03E-05 6.8E-02 N/A 5.0E-07 C5-C5 C5-C5 Alphasido 1.75E-04 3.6E-04 3.6E-04 3.6E-04 47.78 15 3.22E-05 0.10 1.04E-01 3.6E-04 6.45E-02 4.8*E-280 9.74E-09 9.74E | C11-C22 D11-C22 Acomplica | | | | | | | | | | | | | | 3.30E+02 | N/A | 2.0E-01 |
| CS-010 (SS-010 Annualiza 1.755-04 3.685-04 3.685-04 3.685-04 47.78 15 3.225-04 0.10 1.045-01 3.685-04 6.455-02 4.415-289 1.055-05 | C5-C5 C5-C8 Althoring | | | | | | | | | | | | | 1.03∈-05 | 6.86E-02 | N/A | 5.0E-02 |
| C9-013 (24-014 About 3460-04 3460-04 3600-04 3600-04 0.10 1,046-01 3,898-04 6,456-02 1,026-09 1,206-01 N/A 5,06-01 | C9-C10 C9-C10 Arematics | | | | | | | | | | 3.64E-04 | 5.45E+02 | 4.81E+288 | 9.74E-09 | 3.14E+01 | N/A | 2.0E-01 |
| 0.702/ | C9-C12 C9-C12 Allehates | 1.75E-04 | 3.645-04 | 3.46E-04 3.40E-04 | 3.54E-04 | 47.78 47.78 | | | | | 3,69E-04 | 6.45E+02 | 1 62E+284 | 9.80E-01 | 1.20E-01 | N/A | 5.0E-02 |

Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volatiles from Groundwater
Future Child Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Murphy Waste Oil

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

| | | Indoor exposure | Indoor exposure | Risk-based indoor | Pure component | Final indoor |
|------------------|---|--------------------|--------------------|-------------------|-------------------|------------------|
| | | groundwater | groundwater | exposure | water | exposure |
| | | conc., | CDNC., | groundwater | solubility, | groundwater |
| | | carcinogen | noncarcinogen | conc., | Տ (µg/L) | conc., (µg/L) |
| | | (μg/L) | (μ g/L) | (μg/L) | (Jugar) | (HB/C) |
| 71556 | 1,1,1-Trichloroethane | NA | NA NA | NA | 1.33E+06 | NA |
| 76131 | Trichloro-1,2,2-triflouroethane, 1,1,2- | NA | NA | NA | 1.70E+05 | NA |
| 79005 | 1.1.2-Trichloroethane | NA | NA | NA | 4.42E+06 | NA |
| 75343 | 1.1-Dichloroethane | NA NA | NA | NA | 5.06E+06 | NA |
| 75354 | 1,1-Dichloroethylene | NA | NA | NA | 2.25E+06 | NA |
| 120821 | 1,2,4-Trichlorobenzene | NA | NA | NA. | 3.00E+05 | NA |
| 95501 | 1,2-Dichlorobenzene | NA NA | NA NA | NA | 2.77E+07 | NA |
| 54173 1 | Dichlarobenzene, 1,3- | NA | NA | AN | 6.88E+04 | NA |
| 106467 | 1.4-Dichlorobenzene | NA | NA. | NA. | 7.38E+04 | NA |
| 78933 | Butanone, 2- (MEK) | NA | NA | NA | 2.23E+08 | NA. |
| 67641 | Acetone | NA | NA NA | NA. | 1.00E+09 | NA |
| 71432 | Benzene | NA | NA | NA | 1.75E+06 | NA |
| 74839 | Bromomethane | NA | NA | NA. | 1.52E+07 | NA |
| 75150 | Carbon Disulfide | NA NA | NA. | NA | 2,67E+06 | NA |
| 108907 | Chloroberizene | NA. | NA. | NA | 4,72E+05 | NA. |
| 75003 | Ethyl Chloride | NA | NA | NA NA | 5.32E+06 | NA. |
| 67663 | Chloroform | NA. | NA NA | NA. | 7,92E+06 | NA. |
| 156592 | cis-1,2-Dichloroethylene | NA | NA. | NA. | 3.50E+06 | NA |
| 110827 | Cyclohexane | NA NA | NA. | NA. | 5.50E+04 | NA. |
| 10027 | Ethylbenzene | NA NA | NA NA | NA. | 1.69E+05 | NA NA |
| 98828 | Isopropylbenzene | NA NA | NA. | NA. | 5,60E+04 | NA. |
| 108872 | Methyl cyclohexane | NA NA | NA. | NA. | 1.40E+04 | NA |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA NA | NA NA | NA. | 5.10E+07 | NA. |
| 75092 | Methylene chloride | NA NA | NA NA | NA. | 1.30E+07 | NA NA |
| 127184 | Tetrachloroethylene | NA NA | NA NA | NA. | 2.00E+05 | NA NA |
| 108883 | Toluene | NA NA | NA NA | NA NA | 5.26E+05 | NA NA |
| 156605 | trans-1,2-Dichloroethylene | NA NA | NA NA | NA NA | 6.30E+06 | NA NA |
| 79016 | Trichloroethylene | NA NA | NA NA | NA NA | 1.10E+06 | NA NA |
| 75014 | Vinyl chloride | NA NA | NA NA | NA NA | 2.76E+06 | NA. |
| 75014 1330207 | - | NA NA | NA NA | NA NA | 2.20E+05 | NA. |
| | Xylenes | NA NA | NA NA | NA NA | 6.13E+06 | NA. |
| 98862 | Acetophenone | NA NA | NA NA | NA NA | 3.10E+04 | NA NA |
| 91203 | Naphthalene | NA NA | NA NA | NA NA | 2.46E+04 | NA. |
| 91576 | Methylnaphthalene, 2- | NA NA | NA NA | NA NA | 6.94E+03 | NA. |
| 92524 | Biphenyl, 1,1'- | | NA NA | NA NA | 3.93E+03 | NA. |
| 208968 | Acenaphthylene | NA NA | NA NA | NA NA | 4.24E+03 | NA. |
| 83329 | Acenaphthene | | | NA NA | 1.90E+03 | NA. |
| 86737 | Fluorene | NA NA | NA NA | NA NA | 1.28E+03 | NA. |
| 85018 | Phenanthrene | NA NA | NA NA | NA NA | 4.34E+01 | NA NA |
| 120127 | Anthracene | NA NA | NA NA | | 1.00E+04 | NA NA |
| C9-C18 | C9-C18 Aliphatics | NA NA | NA NA | . NA | 5.80E+06 | NA NA |
| C11-C22 | C11-C22 Aromatics | NA | NA. | NA | 1.10E+07 | NA NA |
| C5-C8 | C5-C8 Aliphatics | NA NA | NA NA | NA NA | 5.10E+07 | NA NA |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA | 7.00E+04 | NA NA |
| C9-C12 | C9-C12 Aliphatics | NA | NA NA | NA NA | 7.00E+04 | I RA |

| Incremental | Hazard |
|--------------|---------------|
| risk from | quotient |
| vapor | from vapor |
| intrusion to | intrusion to |
| indoor air, | indoor air, |
| carcinogen | noncarcinogen |
| (unitless) | (unitless) |
| | |

| (trintess) | /unideas/ |
|---------------|---------------|
| NA NA | 6.9E-07 |
| NA NA | NA NA |
| NA NA | NA NA |
| | 1.4E-06 |
| NA NA | · |
| NA NA | 2.3E-06 NA |
| | NA NA |
| NA NA | NA NA |
| | NA NA |
| NA NA | NA NA |
| NA NA | |
| NA | NA DATE OF |
| 1.4E-11 | 2.1E-06 |
| NA NA | 3.7E-06 NA |
| NA NA | 8.6E-08 |
| | |
| NA NA | 9.0E-08 NA |
| NA NA | 2.5E-05 |
| NA NA | |
| NA NA | NA 9.4E.09 |
| NA NA | 8.1E-08 |
| NA NA | NA 3.15.06 |
| NA NA | 3.1E-06 |
| NA 0.4E.13 | NA NA |
| 9.1E-13 | 2.3E-08 NA |
| 3.1E-11 | |
| NA NA | 4.4E-07 |
| NA | 1.7E-06 |
| 1.7E-09 | 1.4E-05 |
| 3.0E-09 | 1.2E-04 |
| NA NA | NA NA |
| NA NA | NA 1 CE OC |
| NA | 1.6E-06 |
| NA NA | 5.1E-06 |
| NA NA | NA . |
| NA NA | NA |
| NA NA | NA NA |
| NA | NA 575 97 |
| NA | 6.7E-07 |
| NA | NA NA |
| NA | 1.2E-02 |
| NA NA | 9.9E-06 |
| NA | 1.2E-03 |
| NA | 1.8E-05 |
| NA | 4.0E-04 |
| | |

95% UCL
Cancer 95% UCL
Risk HI
TOTAL: 5E-09 1E-02

= Cancer risk > 1E-05 or HQ/HI>1E+00

| | Ţ | | | | | | | | [| | | | | • | | | | - t | | |
|------------------------|---|--------------------------|--------------------------|----------------------|----------------|-----------------------------|--------------------------------|----------------|-------------------------|-----------------------------|--------------|-------------------------------|--------------------|--|--------------|-----------------|--|------------|------------------|------------|
| Appendix C.4 | | | | | | | | | <u> </u> | | | | | | | | | | | |
| Johnson & Ettinger | Model - Cata Entry Screen | | | | | | | | • | | | | | | | | | ` | N. | |
| Inhalation of Volatile | e from Groundwater Sortel Scenario - RME | | | | | | | | | | | | | | | | | | | |
| Southwest Program | . Wells G&H Superfund Site, Operable | Unit 2 | | | | | | | | | | | | | | | | | | |
| Abertone Auto Perte | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| CALCULATE DISK | BASED GROUNDWATER CONCEN | | | | | | | | | | | | | | | | | | | |
| CALCOLA IE ROSK | SASED GROUNDWATER CONCEN | TRATION James "X" in "Y | (E8" box) | | | | | | | | | | | | | | | | | |
| ! | YES | 1 | | | | | | | | | | | | | | | | | | |
| 1 | OR | ļ | | | | | | | | | | | | | | | | | | |
| GALCULATE INCR | EMENTAL RISKS FROM ACTUAL OF | DOLLAR WATER COMME | OCT A TOTAL | | | | | | | | | | | | | | | | | |
| (enter "X" in "YES" ! | xx and initial groundwater conc. below | | MINIM | | | | | | | | | | | | | | | | | |
| · · | | • | | | | | | | | | | | | | | | | | | |
| | YES X | | ENTER | ENTER | ENTER | ENTER | | | | | | | | | | | | | | |
| garage. | | | Deoth | | | | ENTER | E | ENTER | | | | | | | | | | | |
| ENTER | Errier trittal orcur | ENTER | below stade | | | Ayerape | Vadose zone | | er-definad | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTE | R ENTER |
| Chemical | Change shirth DISTS | 96% LICK, Groundwaler | to bottom of enclosed | Deoth below grade | SCS | sol/ | SGS | | | Vadoee zone | Vadose zone | Vadoes zone | Target | Tergel hezed | Avereging | Averaging | | | | |
| CAS No. | | dans., | epace floor. | to water table, | soil type | groundwater temperature, | eoil type (used to setimate | | oli vapor masbility, | açılı dir. bulk density, | woll total | act water-tiled | Helt for | auotienii far | ime for | time for | Exposure | Exposure | Exposu | |
| (numbers only, | | Cw | | LWT | directly above | T _a | aoi vapor | Unt part | k. | Pa ^V | porowity, | perceity, 8,, ^v | curcinopene, TR | noncersinopera. | carcinopens, | noncercinogens, | duration. | frequency, | time | (actor |
| no dashes) | Chemical | (MO/L) | (15 or 200 cm) | (cm) | water table | (°C) | permeability) | Note | (cm²) | (g/cm²) | | (cm³/cm²) | | тна | ATe | ATHO | ED | EF | ET | |
| | | | | 14-10 | | 1 -/ | <u> </u> | TVOMP | (Care) | (grant) | (unitions) | (cm /cm) | (unideas) | (unitiess) | (44.0) | (yrs) | (Vs) | (daya/yr) | (ins/da | N) [Na/yr] |
| 71566 | | | 15 | 82.6 | LS | 10 | LS | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 | 8 | | 78 | 2.5 | 8750 |
| 76131 | | | 15 | 82.6 | LS | 10 | LS. | 7 | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | ě | 6 | 78 | 2.5 - | |
| 75343 | | | 15 | 82.5 82.5 | Ls | 10 | LS. | | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | ó | ð | 78 | 2.5 | |
| 75354 | 1,1-Dichlorosthylene | 1,06E-01 | 15 | 82,6 | LS LS | 10 | LS LS | | | 1.5 | 0.43 | 0.3 | 1,0E-08 | 1 | 70 | 6 | - 6 | 78 | 2.5 | |
| 120821 | 1.2.4-Trichlorobenzene | | 1.5 | 62.6 | LS | 10 | LS | | - | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-08 | 1 1 | 70 70 | <u>6</u> | <u> </u> | 78 | 2.5 | |
| 96601 641731 | 1.2-Dichlerobenzens | | 15 | 82,6 | LS | 10 | L. is | 1 | - | 1,6 | 0.43 | 0,3 | 1.0E-05 | -; | 70 | <u> </u> | 6 | 78 | 2.5 | |
| 108467 | Dichlorobenzene, 1,3- 1,4-Dichlorobenzene | 4 605 04 | 15 | 62.6 | LS_ | 10 | LS | | | 1.5 | 0.43 | 6.3 | 1.0E-06 | 1 | 70 | 8 | 8 | 78 | - 2.5 | |
| 78933 | Butanona 2, (MASK) | 4.68E-01 | 15 | 52.6 82.6 | LS LS | 10 | LS | | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | 6 | 78 | 2.5 | 8760 |
| 67641 | Acetone | | 15 | 82.6 | 1.8 | 10 | LS | | | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 | 70 | | | 78 | 2.5 | |
| 7(432 74836 | V | 2.61E-01 | 15 | 52,6 | LS | 10 | LS | | | 1.5 | 0.43 | 0.3 | 1.0E-06 | - ; | 70 | - 5 | | 78 78 | 2.5 | |
| 76160 | Bromomethene Carbon Disuifide | | 15 | 82.6 | LS . | 10 | LS | 1 | | 1,5 | 0.43 | 0.3 | 1.0E-04 | 1 | 70 | | <u>8</u> | 78 | 2.5 | |
| 108907 | Chlorobenzene | | 15 | 82.6 82.6 | LS. | 10 | 19 | | | 1.5 | 0.43 | 0.3 | 1.DE-Q6 | 1 | 70 | 5 | 6 | 78 | 2.6 | 8760 |
| 76003 | Ethyl Chloride | | 15 | 82.5 | LS | 10 | LS IS | | | 1.5 | 0.43 0.43 | 0.3 | 1.0E-04 | 1 | 70 | - 6 | | 78 | 2.5 | |
| 67663 156502 | Chloroform | | 15 | 82.6 | LS | 10 | LŠ | - i | | 1.6 | 0.43 | 1 83 | 1.0E-06 | | 70 | | - B | 78 | 2.5 | |
| 110827 | Cla-1_2-Dichloroethylene Cyclohecone | 2.90E+01 | 15 | 82.6 | ĻS. | 10 | LS | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-08 | L. 1 | 70 | 6 | | 78 | 2.5 | |
| 100414 | Eltybenzene | | 15 | 82.5 82.5 | LS | 10 | LS LS | - ! | | 1.6 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 6 | - 6 | 78 | 2.5 | 6750 |
| 96528 | leastan@erzene | | 15 | 82.6 | Ls | 10 | is | | | 1.5 | 0.43 | 0.3 | 1,0E-06 | | 70 | | 8 | 78 | 2.6 | |
| 168872 1634044 | | | . 15 | 82.6 | LS | 10 | LS | - 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 6 | - | 78 | 2.5 | |
| 75092 | Motivi-Testary-Sutvi Ether Methylone chloride | 1,40E+01 | 15 15 | 82.6 | LS | 10 | i.s | 1 | | 1.5 | 0.45 | 0.3 | 1.0E-06 | 1 | 70 | - 6 | 6 | 78 | 2.5 | |
| 127184 | Tetrachioroety/ione | 4,186-01 | 15 | 82.6 | LS LS | 10 | LS LS | 1 | | 1.5 | 0,43 | 0.3 | 1.0E-05 | 1 | 70 | - 5 | 6 | 78 | 2.5 | |
| 108883 | Tokuene | | 15 | 82.6 | LS . | 10 | . LS | -i | | 1.5 | 0,43 | 0.3 | 1.0E-06 1.0E-06 | <u>!</u> | 70 | | <u> </u> | 78 | 2.5 | |
| 15660S 79016 | 1 | | 15 | 82.6 | ĻS | 10 | LS. | 1 | | 1.5 | 5.43 | 0.3 | 1.0E-06 | | 70 | | | 78 78 | 2.5 | |
| 76014 | Yes divortishes | 2.50E+01 2.17E-01 | 15 | 62.6 | L5 | 10 | 18 | | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | - 6 | 8 | 78 | 2.5 | |
| 1330207 | Xylenes | E. 17 C. 91 | 18 | 82.8 | LS LS | 10 | LS | } - | | 1,5 | 0.43 | 0.3 D.3 | 1.0E-06 | 1 | 70 | - 6 | | 78 | 25 | |
| 96652 21203 | Acetophenone | | 16 | 82.6 | įš | 10 | ĻŠ | - i | | 1.5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | 1 1 | 70 70 | | | 78 | 2.5 | |
| 91576 | Naphthalene 2- | 2,70€+00 | 15 | 82.6 | ĻŞ | 10 | ĻS | 1 | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | | | 78 78 | 2.5 | |
| 92524 | | | 15 | 52.6 82.6 | LS LS | 19 10 | LS | | | 1,5 | 0,43 | 0.3 | 1,0E-06 | 1. | 70 | 9 | | 78 | 2.5 | |
| 208968 | Acenaphilitylene | | 15 | 82.6 | LS | 10 | L8 L8 | | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | e | | 78 | 2.5 | |
| 83329 96737 | Acensolitiere | | 15 | 82,6 | LS | 10 | Lŝ | | | 1,5 | 0.43 | 0.3 | 1.0E-06 1.0E-05 | 1 | 70 | d | 8 | 78 78 | 2.5 | |
| 85018 | Physics Phenanthrene | 2,10E+00 | 15 | 82.6 | LS | 10 | L8 | 1 | | 1,5 | 9.43 | 0.3 | 1,0E-06 | 1 1 | 70 | 6 | 6 | 78 | 2.5 | |
| 120127 | Anthrecene | 2105-01 | 15 16 | 82,5 82,5 | LS LS | 10 | LŞ. | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-05 | 1 | 70 | 6 | 6 | 78 | 2.5 | 8760 |
| C2-C18 | C9-C18 Aliphatica | | 16 | 82.5 | LS | 10 | LS LS | | | 1.5 | 0.43 0.43 | 0.3 | 1.05-06 | ! | 70 | - | 6 | 78 | 2.5 | |
| C11-C22 C8-C8 | C11-C22 Averyation | | 16 | 32.6 | ĻS | 10 | L5 | i | | 1.5 | 0.43 | 0.3 | 1.0E-06 | - ; | 70 | | | 76 78 | 2.5 | |
| C9-C10 | C5-C5 Allohutice C9-C10 Aromatics | | 15 | 82.6 | - 5 | 10 | 1.5 | 1 | | 1.5 | 6.43 | 0.3 | 1,0E-06 | 1 | 70 | 6 | - ĕ | 78 | 2.5 | |
| C9-C12 | | | 15 | 82.6 | 1.5 | | LS | 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 6 | Α | 78 | 2.5 | |

Note: 1) Default coll parameters from table 7 of Learne Guida for Evaluating Subsurface Vapor Interests into Building (U.S. EPA June 19, 2003) were used for addit under filled porporty (b_p), exil organic curbon h action (f_m), and local porporty (h_p), and sold day bulk density (p_p).

Appendix C.4
Johnson & Ettinger Model - Chemical Properties Screen
Inhalation of Volatiles from Groundwater
Future Child Recreational Scenario - RME
Southwest Proerties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

| Chemical CAS No. | Chemical | Diffusivity in air, D _a (cm ² /s) | Diffusivity in water, D _w (cm ² /s) | Henry's law constant at reference temperature, H (atm-m ³ /mol) | Henry's law constant reference temperature, T _R (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normat boiling point, T _B (°K) | Critical temperature, T _C (°K) | Organic carbon partition coefficient, K _{oc} (cm³/g) | Pure component water solubility, S (mg/L) | Unit risk factor, URF (µg/m³) ⁻¹ | Reference conc., RfC (mg/m³) |
|---------------------|-------------------------------------|--|--|---|--|--|---|--|--|--|---|---------------------------------------|
| | | | *************************************** | | | | | | | | | |
| | 1,1,1-Trichloroethane | 7.80E-02 | 8.80E-06 | 1.72E-02 | 25 | 7,136 | 347.24 | 545,00 | 1,10E+02 | 1.33E+03 | N/A | 2.2E+00 |
| | Trichloro-1,2,2-triflouroethane, 1, | 2.88E-02 | 8.07E-06 | 5.17E-01 | 25 | 1,326 | 320.70 | 481.05 | 2.25E+02 | 1.70E+02 | N/A | 3.0E+01 |
| | 1,1,2-Trichloroethane | 7.80E-02 | 8.80E-06 | 9.12E-04 | 25 | 8,322 | 386.15 | 602.00 | 5.01E+01 | 4.42E+03 | 1.6E-05 | 2.2E+00 |
| | 1,1-Dichloroethane | 7.42E-02 | 1.05E-05 | 5.61E-03 | 25 | 6,895 · | 330.55 | 523,00 | 3,16E+01 | 5.06E+03 | N/A | 5.0E-01 |
| | 1,1-Dichloroethylene | 9.00E-02 | 1.04E-05 | 2.61E-02 | 25 | 6,247 | 304.75 | 576.05 | 5.89E+01 | 2.25E+03 | N/A | 2.0E-01 |
| | 1,2,4-Trichlorobenzene | 3.00E-02 | 8.23E-06 | 1.42E-03 | 25 | 10,471 | 486.15 | 725.00 | 1.78E+03 | 3.00E+02 | N/A | 2.0E-01 |
| | 1,2-Dichlorobenzene | 6.88E-02 | 9.41E-06 | 1.62E-06 | 25 | 1,223 | 465.00 | 697,50 | 5.34E+01 | 2.77E+04 | N/A | N/A |
| | Dichlorobenzene, 1,3- | 4.14E-02 | 8.85E-06 | 4.70E-03 | 25 | 1,242 | 446.00 | 683.96 | 1.70E+02 | 6.88E+01 | N/A | N/A |
| | 1,4-Dichlorobenzene | 6.90E-02 | 7.90E-06 | 2.43E-03 | 25 | 9,271 | 447.21 | 684.75 | 6.17E+02 | 7.38E+01 | N/A | 8.0E-01 |
| 78933 | Butanone, 2- (MEK) | 8.08E-02 | 9.80 E- 06 | 5.60E-05 | 25 | 1,311 | 352.50 | 528,75 | 3.83E+00 | 2.23E+05 | N/A | N/A |
| 67641 | Acetone | 1.24E-01 | 1.14E-05 | 3.88€-05 | 25 | 6,955 | 329.20 | 508,10 | 5,75E-01 | 1.00E+06 | N/A. | N/A |
| 71432 | Benzene | 8.80E-02 | 9.80E-06 | 5,56E-03 | 25 | 7,342 | 353.24 | 562.16 | 5.89E+01 | 1.75E+03 | 7.8E-06 | 3.0E-02 |
| 74839 | Bromomethane | 7.28E-02 | 1.21E-05 | 6.22E-03 | 25 | 1,362 | 276.50 | 414.75 | 1.43E+01 | 1.52E+04 | N/A | 5.0E-03 |
| 75150 | Carbon Disulfide | 1.04E-01 | 1.29E-05 | 1.27E-02 | 25 | 6,391 | 319.00 | 552.00 | 5.14E+01 | 2.67E+03 | N/A | 7.0E-01 |
| 108907 | Chlorobenzene | 7.30E-02 | 8.70E-06 | 3.71E-03 | 25 | 8,410 | 404.87 | 632.40 | 2.19E+02 | 4.72E+02 | N/A | 6.0E-02 |
| 75003 | Ethyl Chloride | 1.26E-01 | 6.50E-06 | 8.67E-03 | 25 | 1,355 | 249.00 | 373.50 | 1.43E+01 | 5.32E+03 | N/A | 1.0E+01 |
| 67663 | Chloroform | 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 5,988 | 334.32 | 536,40 | 3.98E+01 | 7.92E+03 | 2.3E-05 | 5.0E-02 |
| 156592 | cis-1,2-Dichloroethylene | 7.36E-02 | 1.13E-05 | 4.07E-03 | 25 | 7,192 | 333.65 | 544,00 | 3.55E+01 | 3.50E+03 | N/A | 2.0E-01 |
| | Cyclohexane | 8.00E-02 | 9.00E-06 | 2.00E+00 | 25 | 1,309 | 353,85 | 530.78 | 1.60E+02 | 5.50E+01 | #N/A | #N/A |
| 100414 | Ethylbenzene : | 7.50E-02 | 7.80E-06 | 7.88E-03 | 25 | 8,501 | 409.34 | 617.20 | 3.63E+02 | 1.69E+02 | N/A | 1.0E+00 |
| 98828 | Isopropylbenzene | 6.50E-02 | 7.83E-06 | 1.47E-02 | 25 | 1,259 | 425.40 | 631.01 | 9,31E+03 | 5.60E+01 | N/A | 4.0E-01 |
| 108872 | Methyl cyclohexane | 9.86E-02 | 8.52E-06 | 4.23E-01 | 25 | 1,296 | 373.90 | 560.85 | 2.68E+02 | 1.40E+01 | N/A | 3.0E+00 |
| 1634044 | Methyl-Tertiary-Butyl Ether | 1.02E-01 | 1.05E-05 | 5.87E-04 | 25 | 1,324 | 328.36 | 497.11 | 3.84E+01 | 5.10E+04 | N/A | 3.0E+00 |
| 75092 | Methylene chloride | 1.01E-01 | 1.17E-05 | 2.19E-03 | 25 | 6,706 | 313.00 | 510.00 | 1.17E+01 | 1.30E+04 | 4.7E-07 | 3.0E+00 |
| 127184 | Tetrachloroethylene | 7.20E-02 | 8.20E-06 | 1.84E-02 | 25 | 8,288 | 394.40 | 620.20 | 1.55E+02 | 2.00E+02 | 5.9E-06 | N/A |
| 108883 | Toluene | 8.70E-02 | 8.60E-06 | 6.63E-03 | 25 | 7,930 | 383.78 | 591.79 | 1,82E+02 | 5.26E+02 | N/A | 4.0E-01 |
| 156605 | trans-1,2-Dichloroethylene | 7.07E-02 | 1.19E-05 | 9.39E-03 | 25 | 1,333 | 320.85 | 516.50 | 5.25E+01 | 6.30E+03 | N/A | 2.0E-01 |
| | Trichlomethylene | 7,90E-02 | 9.10E-06 | 1.03E-02 | 25 | 7,505 | 360.36 | 544.20 | 1.66E+02 | 1.10E+03 | 1.1E-04 | 4.0E-02 |
| | Vinyl chloride | 1.06E-01 | 1.23E-05 | 2,71E-02 | 25 | 5,250 | 259.25 | 432.00 | 1.86E+01 | 2.76E+03 | 8.8E-06 | 1.0E-01 |
| 1330207 | | 7.69E-02 | 8.44E-06 | 6.73E-06 | 25 | 1,264 | 417.40 | 616.21 | 2.41E+02 | 2.20E+02 | N/A | 1.0E-01 |
| | Acetophenone | 6.00E-02 | 8.73E-06 | 1.02E-05 | 25 | 1,214 | 475,00 | 712.50 | 4.62E+01 | 6.13E+03 | N/A | N/A |
| | Naphthalene | 5.90E-02 | 7.50E-06 | 4.83E-04 | 25 | 10,373 | 491.14 | 748.40 | 2.00E+03 | 3.10E+01 | N/A | 3.0E-03 |
| | Methylnaphthalene, 2- | 4.84E-02 | 7.75E-06 | 1.01E-03 | 25 | 1,169 | 514.05 | 761,01 | 8.51E+03 | 2.46E+01 | N/A | 3.0E-03 |
| | Biphenyl, 1,1'- | 4.04E-02 | 8.15E-06 | 3.03E-04 | 25 | 1,149 | 529.10 | 793.65 | 6.25E+03 | 6.94E+00 | N/A | N/A |
| | Acenaphthylene | 4.43E-02 | 7.44E-06 | 2.80E-04 | 25 | 1,118 | 553.00 | 792.01 | 4.79E+03 | 3.93E+00 | N/A | 3.0E-03 |
| | Acenaphthene | 4,21E-02 | 7.69E-06 | 1.55E-04 | 25 | 12,155 | 550.54 | 803.15 | 7.08E+03 | 4.24E+00 | N/A | 3.0E-03 |
| | Fluorene | 3.63E-02 | 7.88E-06 | 9.41E-08 | 25 | 12,666 | 570.44 | 870.00 | 7.71E+03 | 1.90E+00 | N/A | 3.0E-03 |
| | Phenanthrene | 3.30E-02 | 7.47E-06 | 1.30E-04 | 25 | 1,057 | 613.00 | 869.01 | 1.41E+04 | 1.28E+00 | N/A | 3.0E-03 |
| | Anthracene | 3.24E-02 | 7.74E-06 | 6.51E-05 | 25 | 13,121 | 615.18 | 873,00 | 2.95E+04 | 4.34E-02 | N/A | 3 0E-03 |
| 9-C18 | C9-C18 Aliphatics | 6.00E-02 | 1.00E-05 | 1.66E+00 | 25 25 | 13,121 NA | NA | 873,00 NA | 6.80E+05 | 1.00E+01 | N/A | 2 0E-03 |
| 11-C22 | C11-C22 Aromatics | 6.00E-02 | 1,00E-05 | 7.32E-04 | 25 25 | NA NA | NA NA | NA NA | 5.00E+03 | 5.80E+03 | N/A | 5.0E-02 |
| 5-C8 | C5-C8 Aliphatics | 6.00E-02 | 1.00E-05 | 1.30E+00 | 25 | NA NA | NA NA | NA NA | 2.27E+03 | 1.10E+04 | N/A | 2.0E-02 |
| 3-C0 3-C10 | C9-C10 Aromatics | 6.00E-02 | 1.00E-05 | 7.92E-03 | 25 | NA NA | NA NA | NA NA | 1.78E+03 | 5.10E+04 | N/A N/A | 5.0E-02 |
| | | | 1 1.000=00 | 1 7.826-03 | . ∠o l | INA. | I IVA | I IVA | 1 1/85+03 | 1 3.10E+U4 | I IV/A | , 3 DE-UZ 1 |

Appendix C, A
Johnson A Elfinger Model - Calculations Screen
Inheliation of Velatiles from Geoundwiser
Fruiter Chief Recreational Scenario - RME
Southwest Prefer, Welle G&H Superfund Stee
Abertons Auto Parts
Abertons Auto Parts

| | Source- building separation, | Vadovo Zone soli air-filled pozneity, | Vertices zon effective total fluid esturation, | Vadose zone soli intrinsic permeability, | Vacione zone soli relative sir permeability. | Vations spins will effectlys vacor permeability. | Thickness of capillary zone, | Total porosity in capitary zone, | Air-filled porosity in capillary zone, | Winter-filled occountry in capillary zone. | Rose- wall seam | Bidg. ventilation | Area of enclosed apace below | Crack- lo-lotal area | Crack depth below | Enthalpy of vaporization at ave groundwater | Henry's law constant at ave. groundwater | Henry's law constant at vs. groundwat | Vapor viscosity at svs. soil |
|---|------------------------------------|--|---|--|---|---|------------------------------------|---|---|---|-----------------------|----------------------|---------------------------------------|----------------------------|-------------------------|---|--|---|------------------------------------|
| | Lr | 9.* | 8. | k, | k _{ee} | k, | | Der. | e., | S.a | berimeler, Xerack | TEE4, | talado, | retto, | aredo, | imperature, | torcordure, | temperature, | temperature, |
| | (cm) | (cm'/cm') | (cm³/cm³) | (cm²) | (cm²) | (¢m²) | (cm) | (cm²/cm²) | (cm²/cm²) | (cm³/cm³) | | (cm ³ /e) | Ag (cm²) | | Z | م⊢ل س | Hra | Нtы | μm |
| 71556 1,1,1-(richkrowthurse | | | | | | | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 1 | fact som 1 | (Eq.) | (CHI 76) | (cm.) | (unitiess) | (Cm) | (ca/moi) | (adm-m³/mc/) | (unitiese) | (g/cm-s) |
| 76131 Trichioro-1.2.2-Inflourostrume, 1.1.2- | 57,6 | 0.130 | 0.660 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0.43 | 0.127 | 0.303 | 3.015.04 | 1,81E+07 | | | | - | | | |
| 79005 1,1,2-Trichloroethene | 67.8 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | J.DIE+A | 1.81E+07 | 5.6/E40/ | 5.31E-05 | . 15 | 7,885 | 8.50E-03 | 3.66E-01 | |
| 75343 1.1-Dichlomethane | 67.6 | 0.130 | 0.659 | 1.626-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.015+04 | 1.81E+07 | 0.075-07 | 5.31E-05 5.31E-05 | 15 | 1,436 | 4,55E-01 | 1.96E+01 | |
| 75354 1,1-Olchig cetrylena | 67.6 67.5 | 0.130 | 0.650 | 1.62E-08 | 0.390 | <u>5,3</u> 3,5-09 | 18.76 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.07E-07 | 5.31E-05 5.31E-05 | 15 | 9,572 | 3,885-04 | 1.675-02 | 1.7SE-04 |
| 120821 1,2,4-Trichiorabenzene | 67.6 | 0,130 | 0,659 0,659 | 1.52E-08 | 0,390 | 6.33E-09 | 18.75 | 0,43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.07E+07 | 5,31E-05 | | 7,450 | 2.88E-03 | 1.245-01 | 1.75E-04 |
| 95601 1.Z-Dichlorobertzene | 67.6 | 0.130 | 0.659 D.659 | 1.62E-08 | 0.390 | 5.33E-09 | 18.75 | 0.43 | 0.127 | | 3.01Fe/14 | 1815+07 | E 07E-07 | 5,31E-05 | 15 | 6,392 | 1.47E-02 | 6,34E-01 | 1.76E-04 |
| 541731 Dichlorobenzene, 1.3- | 67.6 | 0.130 | 0.650 | 1.62E-08 | D.390 | 5,33E-09 | 18.75 | 0.43 | 0,127 | 0.303 | 3.01F+04 | .1.816+07 | 5.67E+07 | 5.31E-05 | 15 | 13,230 | 4.35E-04 | 1.87E-02 | 1,75E-04 |
| 106467 1,4-Dichlorobenzene | 67.5 | 0.130 | 0.669 | 1.52E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.61E+07 | 5.875+07 | 5.31E-05 | 15 | 1,521 | 1,41E-06 | 6.09E-05 | 1.75E-04 |
| 76933 Butanone, 2- (MEHC) | 67.0 | 0,130 | 0.669 | 1.62E-08 | 0.390 | 6,33E-09 | 16,75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 1,503 11,243 | 4.11E-03 | 1.77E-01 | 1,75E-04 |
| 67541 Acetone | 87.6 | 0.130 | 0,009 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0,127 | 0.303 | 3.01E+04 | 1.61E+07 | 5.67E+07 | 5,31E-05 | 15 | 1,486 | 8.69E-04 4.90E-05 | 3.83E-02 2.11E-03 | 1.75E-04 1.75E-04 |
| 71432 Benzene | 67.6 | 0.130 | 0.669 | 1.62E-08 | 0.390 | 1,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1 B1E+07 | 5.87E+07 | 5.31E-05 | 16 | 7,569 | 1 97E-05 | 0.50E-04 | |
| 74839 Bromomethane | 67.6 | 0.130 | 0.660 | 1.02E-08 | 0.390 | 6.33E-09 | 18,75 | 0,43 | 0:127 | 0.303 | 3.01E+04 | 1.51E+07 | 5.67E+07 | 5.31€-05 | 15 | 5,122 | 2.69E-03 | 1,18E-01 | 1.75E-04 1.75E-04 |
| 78160 Certon Disulfide | 67.6 | 0.130 | 0.550 | 1,62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.316-05 | 16 | 1,337 | 5.52E-03 | 2.38E-01 | 1.75E-04 |
| 108907 Chloropenzene | 67.6 | 0.130 | 0.659 | 1.02E-08 | 0,390 | 6,33E-09 6,33E-09 | 18.76 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.87E+07 | 5.31E-05 | 15 | 6.662 | 5.99E-03 | 3.01E-01 | 1.75E-04 |
| 75003 Ethyl Chloride | 67.6 | 0.130 | 0.659 | 1.62E-G8 | 0,390 | | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31F-05 | 15 | 9,803 | 1.54E-03 | 6.65E-02 | 1.75E-04 |
| 67663 Chicroform | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6,33E-09 | 18.76 | 0.43 | 0.127 | 0.303 | 3 01E+04 | 1.81E+07 | 5 57É+07 | 31F-05 | 15 | 1201 | 7.79E-03 | 3,35E-01 | 1,75E-04 |
| 155592 cia-1,2-Dichloroethylene | 57.6 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 7,654 | 1.565-03 | 8.02E-02 | 1.75E-04 |
| 110827 Cyclohagne | 67.6 | 0.130 | 0.650 | 1.62E-01 | 0,390 | 5.336-09 6.336-09 | 18.75 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-06 | 15 | 7,734 | 2.04E-03 | 8,77E-02 | 1,75E-04 |
| 100414 Ethilbenzene | 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 6.31E-05 | 15 | 1.486 | 1.76E+00 | 7.54E+01 | 1.75E-04 |
| 98828 (ecoropythenzene | 67.6 | 0,130 | 0.650 | 1.62E-08 | 0.390 | 6.33E-09 | 10.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 10,155 | 3.18E-03 | 1.37E-01 | 1.75E-04 |
| 108872 Methyl cyclohecene | 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0,127 | 0,303 | 3.01E+04 | 1.61E+07 | 5,67E+07 | 5.31E-05 | 15 | 1,540 | 1.28E-02 | 5.51E-01 | 1,75E-04 |
| 1634044 Methyl-Tentary-Butyl Ether | 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81€+07 | 5.67E+07 | | 15 | 1,505 | 3.70E-01 | 1.59E-01 | 1.75E-04 |
| 75092 Methylene chicride | 67.6 | 0.130 | 0.850 | 1.62E-08 | 0.300 | 6.33E-09 | 18.75 | 0.43 | D,127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.87E+07 | 5.316-05 | 15 | 1,447 | 5.16E-04 | 2.22E-02 | 1,75E-04 |
| 127154 Tetrachicrosthiane 198883 Tokume | 67,6 | 0.130 | 0.650 | 1.62E-08 | 0.300 | 6.33E-09 | 15.75 | 0.43 | 0,127 | 0.303 | 3.01E+04 | 1 81E+Q7 | 6.67E+07 | 5.31E-05 | 15 | 7,034 | 1.17E-03 | 5.03E-02 | 1.756-04 |
| | 67,6 | 0.130 | 0.656 | 1.62E-08 | 0.350 | 6.33E-09 | 18.76 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 181E+07 | 5.07E+07 | 5,31E-06 | 15 | 9,553 | 7,83E-03 | 3.37E-01 | 1.75E-04 |
| 158605 trans-1,2-Otchlorostwiene | 67.6 | 0.130 | 0.559 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.07E+07 | 5.31E-05 | 15 | 9,154 | 2.02E-03 | 1.26E-01 | 1.75E-04 |
| 79016 Trichioroethylene 75014 Vinyl chloride | 67,6 | 0.130 | 0.859 | 1.52E-08 | 0,390 | 5,33E-09 | 18.76 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1,81E+07 | 5.67E+07 | 5,31E-05 | 15 | 1,A17 | 8.27E-03 | 3.66E-01 | 1.75E-04 |
| 1330207 Xylenes | 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | B,33€-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3,01E+04 | 1.81E+07 | 5.07E+07 | | 15 | 8,557 | 4.79E-03 | 2.06E-01 | 1.75E-04 |
| 96602 Acetophenone | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0,390 | 5,33E-09 | 18.75 | 0.43 | 0.127 | | 3.012-04 | 1.51E+07 | 5.67E+07 | 5.31E-05 | 15 | 5,000 | 1.73E-02 | 7.45E-01 | 1.76E-04 |
| 91203 Naphthelene | 67,6 | 0.130 | D.659 | 1.62E-08_ | 0.390 | 6.33E-59 | 18.75 | 0.43 | 0.127 | | 3.01E+04 | 1.815+07 | 5.67E+07 | 5.31E-05 | 15 | 1,542 | 6.86E-06 | 2.52E-04 | 1.75€ 04 |
| 91576 Matrylnaphthalone, 2- | 57.6 | D.130 | 0.659 | 1.62E-08 | 0,390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3 0 1E+04 | 1.81E+07 | 5.67E+07 | | 15 | 1,518 | 8.91E-06 | 3.83E-04 | 1.75E-04 |
| 62624 Bloharyt, 1,11- | 67.5 | 0.130 | 0.659 | 1.82E-08 | 0.390 | 5.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E=04 | 1.81E+07 | 5.6/E-07 | 5 31E-05 | 15 | 12,913 | 1.52E-04 | 6 65E-03 | 1.75E-04 |
| 208968 Acenaph Sylene | 67.6 | 0,130 | 0,659 | 1.62E-08 | 0,390 | 5.33E-09 | 18.75 | D.43 | 0.127 | 0.303 | 301E-04 | 1.81E+07 1.81E+07 | 5,67E-07 | 5 31E-05 | 15 | 1,506 | 8.86E-04 | 3.81E-02 | 1.75E-04 |
| 63329 Aconsphilene | 57.4 | 0.130 | 0,669 | 1.62E-08 | 0,390 | 6.33E-09 | 10.75 | 0.43 | 0.127 | 0.303 | 3.V1E+04 | 1.81E+07 | S 67E+07 | | 16 | 1,472 | 2,66E-04 | 1.14E-02 | 1.75E-04 |
| 86737 Fluorens | 67.8 | 0.130 | 0.659 | 1.6ZE-08 | 0.390 | 4.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 301E+04 | 1.81E+07 | 5.67E 407 | 5.31E-05 | 15 | 1,613 | Z45E-04 | 1.05E-02 | 1,75E-04 |
| 85018 Phonontypre | 67.6 | 0 130 | 0.659 | 1,62E-06 | 0,390 | 6,33E-09 | 18,75 | 0.43 | 0.127 | | 301E40 | 1.81E+07 | 5.67E+07 | 5,31E-05 | 15 | 15,123 | 3.67E-05 | 1.58E-03 | 1.75E-04 |
| 120127 Antivacene | 67.6 | 0.130 | 0,650 | 1.62E-08 | 0.390 | 4.33E-09 | 18.75 | 0.43 | D.127 | 0,303 | 301E40 | 1,81E+07 | 3.0/E+0/ | 5.31E-05 | 15 | 16,235 | 2.20E-08 | 9.48E-07 | 1.75E-04 |
| CS-C18 CS-C18 Allohatics | 67.6 | 0.130 | 0.656 | 1,62E-08 | 0.350 | 6.33E-09 | 18.76 | 0.43 | 0,127 | | 30 Fe/14 | 1,81E+07 | 5.0/E-07 | 6.31E-05 | - 15 | 1,479 | 1.145-54 | 4.90E-03 | 1.75E-04 |
| C11-G22 C11-C22 Aromatica | 57,6 57,6 | 0.130 | 0.550 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0,127 | | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-US | 15 | 18,353 | 1.29E-05 | 5.43E-04 | 1.75E-04 |
| C5-G8 C5-G8 Allehatica | 67.8 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 8.33E-09 | 18.75 | 0.43 | 0.127 | | 3.01E+04 | 1.81E-07 | 5.57E+07 | 6.31E-05 | 15 | NA . | B.28E-01 | 3.68E+01 | 1.75E-04 |
| C9-C10 C9-C10 Arematica | 67.6 | 0.130 0.130 | 0.659 | 1,62E-08 | 0.390 | 5.11E-09 | 18,75 | 0.43 | 0.127 | | 301E+04 | 1815+07 | 6.475407 | 5.31E-05 5.31E-05 | . 15 16 | NA . | 3.60E-04 | 1.55E-02 | 1.755-04 |
| CS-C12 CS-C12 Allohatics | 67.6 | | 0.659 | 1,625-08 | 0.390 | 6.33E-09 | 18.76 | 0.43 | 0.127 | | 3.01E+04 | \$ 81E+07 | 5.07E+07 | 431E 05 | | NA. | 6.48E-01 | 2.79E-01 | 1.75E-04 |
| | 1 01.6 | D.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | | 3.01E+04 | | 5.67E+07 | 6.31E-05 | 15 15 | HA HA | 3.96€-03 | 1.70E-01 3.36E+01 | 1.75E-04 |

Apprendix C.A.
Johnson & Effencer Model - Calculations Screen
Inhibitation of Volatilise from Groundwater
Future Critic Recreational Screenio- RME
Southness Provides, Walls G&H Superfund Stee, Operable Unit 2
Aberjons Auto Partie

| | | Vadore zone effective diffusion coefficient. | Capillary 2019 effective diffusion coefficient, D ^{eff} er | Yotal overell affective diffusion coefficient, | Diffusion path langth, | Convection path length, | Source yapar conc | Crack radius. | Average Vapor flow rate into bidg., C _{tot} | Crack affective diffusion coefficient, press. | Area of crack. | Exponent of equivalent foundation Paciet number. exp(Pe ^f) | infinite source index attenuation coefficient | infinite source bida, conc., | Unit (lek factor, URF | Reference conc., |
|----------|---|---|--|--|------------------------------|-------------------------------|-------------------------|------------------|--|---|----------------|--|---|---------------------------------------|--------------------------------|---------------------|
| | | (cm²/a) | (cm²(s) | (cm /e) | (cm) | (cm) | (ma/m ₂) | (cm) | (cm ³ /a) | (cm ² /n) | (cm²) | (urutiess) | (unidess) | (my/m²) | (jg/m ²) 1 | (mg/m³) |
| | | (CII 79) | (Self-14) | (\$1,10) | City | TOTAL . | | 12 | 14 | | | | | | | |
| 7-556 1 | 1.1Trichlorcethane | 4.76E-04 | 4.45E-04 | 4.66E-04 | 67.6 | 15 | N/A | 0.10 | 1 4.79E+01 | 4,75E-04 | 3 01E+03 | 1.216+216 | 2.36E-06 | N/A | NVA | 2.2E+00 |
| | Trichloro-1,2,2-frificuroethene, 1,1,2- | 175E-04 | 1.63E-04 | 1.71E-04 | 67.B | 15 | N/A | 0.10 | 4.79E+D1 | 1,75E-04 | 3.01E+03 | #NUM! | 1.98E-06 | N/A | N/A | 3.0E+01 |
| | 1,1,2-Trichloroethene | 5.246-04 | 4.95E-04 | 6.18E-04 | 67.8 | 16 | N/A | 0.10 | 4.79E+01 | 5,24E-04 | 3.01E+03 | 3.42E+197 | 2.38E-06 | N/A | | 2.25+00 |
| 75143 | 1.1-Dichlorosthane | 4.58E-04 | 4.29E-04 | 1.50E 01 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 4.58E-04 | 3.01E+03 | 1.55E+226 | 2.35E-06 | N/A | N/A | 5.0E-01 |
| | 1.1-Dichioroethylene | 5.47E-64 | 5.12E-04 | 6.37E-04 | 87.6 | 15 | 6 71E+01 | 0.10 | 4.79E+01 | 5,47E-04 | 3,01E+03 | 2.46E • 189 | 2 39E-06 | 1.60E-04 | 14/A | 2.0E,-01 |
| *2087111 | 2.4-Trichloroberzene | 2.26E-04 | 2.14E-04 | 2.22E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 2.25E-04 | 3.01E+03 | #NUM! | 2 1DE-06 | N/A | N/A | 2.0E-01 |
| 955/11 1 | 2-Dichiorobenzane | 1.56E-02 | 1.60E-02 | 1.57E-02 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 1,50E-02 | 3,01E+03 | 4 41E+06 | 2 64E-06 | N/A | N/A | N/A |
| | Dichlorobenzene, 1.3- | 2.56E-04 | 2.40E-04 | 2,51E-04 | 57.6 | 15 | N/A | 0.10 | 4.79E+01 | 2.55E-04 | 3,01€+03 | ANUM | 2.16E-00 | N/A | N/A | N/A |
| | 4-Dichlorobenzene | 4.386-04 | 4,12E-04 | 4.31E-04 | 67.6 | 15 | 1.79E+01 | 0.10 | 4 79E+01 | 4.38E-04 | 3.01E+03 | 2.05E+236 | 2 34E-06 | 4.19E-05 | NA | 8,0E-01 |
| | Butanone, 2- (MEK) | 9.45E-04 | 9.27E-04 | 9.40E-04 | 67.6 | 16 | N/A | 0.10 | 4 79E+01 | 9.45E-04 | 3,01E+03 | 3.81E+109 | 2.49E-05 | N/A | N/A | N/A |
| 67641 | | 2.07€-03 | 2.06E-03 | 2.07E-03 | 87,5 | 15 | N/A | 0,10 | 4 79E+01 | 2.07E-03 | 3.01E+03 | 1.22E+60 | 2,57E-08 | NA. | N/A | N/A |
| 71432 8 | | 5.42E-04 | 6,97E-04 | 5.32E-04 | 67.6 | 15 | 3.02E+01 | 0.10 | 4.79E+01 | 5,42E-04 | 3,01E+03 | 1 94E+191 | 2.39€-06 | 7.22E-05 | 7.8E-08 | |
| | Bromomethene | 4,40E-04 | 4.18E-04 | 4.38E-04 | 67.6 | 15 | NA | 0.10 | 4.79E+01 | 4.46E-04 | 3.01E+03 | 1.58E+232 | 2.34E-06 | N/A | NA | 6.0E-03 |
| | Carbon Disuffice | 6.34E-04 | 5.94E-04 | 6 23E-04 | 67.5 | 16 | N/A | 0.10 | 4.79E+01 | 6.34E-04 | 3.01E+03 | 1.95E+163 | 2.42E-05 | N/A | NA | 7.0E-01 |
| | Chiorabenzene | 4.55E-04 | 4.27E-04 | 4.47E-04 | 67.6 | 15 | NVA | 0.10 | 4.79E+01 | 4,65E-04 | 3.01E+03 | 3.77E+227 | 2.35E-08 | N/A | N/A | 6.0E-02 |
| | Ethyl Chloride | 7.68E-04 | 7 18E-04 | 7.51F-04 | 67.6 | 13 | N/A | 0.10 | 4.79E+01 | 7.66E-04 | 3.01E+03 | 2 20E+135 | 2,46E-06 | N/A | N/A | 1.0E+01 |
| | Chloroform | 6.43E-04 | 6.02E-04 | 0 31E 04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 6.43E-04 | 3.01E+03 | 1 77E+151 | 2.43E-06 | N/A | 2.3E-05 | 5 DE-02 |
| | cis-1.2-Dichloroethylene | 4.59E-04 | 4.30E-04 | 4.60E-04 | 67.6 | 16 | 2.54E+03 | 0.10 | 4.79E+01 | 4,69E-04 | 3 01E+03 | 7.48E+225 | 2,35E-06 | 5.97E-03 | N/A | 2 0E-01 |
| | Cycloheume | 4.85E-04 | 4 53E 44 | 4.76E-04 | 67.6 | 16 | N/A | 0.10 | 4.79E+01 | 4.85E-04 | 3 01E+03 | 4.89E+213 | 2.35E-06 | NVA | #N/A | MIVA |
| | | 4.60E-04 | 4.31E-04 | 4.52E-04 | 67.6 | 16 | N/A | 0.10 | 4.79E+01 | 4.60E-04 | 301E+03 | 1.47E+225 | 2.35E-06 | N/A | N/A | 1.0E+00 |
| | Etylongere | 3 95E-04 | 3 70E-04 | 3.66E-04 | 97.6 | 15 | N/A | 0.10 | 4.79E+01 | 3,95E-04 | 3.01E+03 | 1.24E+262 | 2.31E-06 | N/A | N/A | 4.0E-01 |
| | aopropy/benzane | 5 96E-04 | 5.59E-04 | 5.86E-04 | 67.6 | 15 | N/A | 0.1D | 4,79E+01 | 5.88E-04 | 3.01E+03 | | 2.41E-06 | N/A | N/A | 3.0E+00 |
| | Methyl cyclohaxane | 5 VOE-U4 | 6.28E-04 | 6.66E-04 | 67.5 | 15 | 3.11E+02 | 0.10 | 4.79E+01 | 8.67E-04 | J.01E+03 | 2,13E+155 | 2.43E-06 | 7.58E-04 | N/A | 3.0E+00 |
| | Methyl-Terbary-Butyl Ether | 6.35E-04 | 5.96E-04 | 6.24E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 6,35E-04 | 3.01E+03 | | 2 42E-06 | N/A | 4 7E-07 | |
| | Methylene chloride | 4.39E-04 | 4.11E-04 | 4.31E-04 | 67.6 | 15 | 1 41E+02 | 0.10 | 4.79E+01 | 4.39E-04 | 3.01E+03 | | 2.34E-00 | 3.29E-04 | 5.9E-08 | |
| | Tetrachlorpethylene | | 5.00E-04 | 5.24E-04 | 67.6 | 16 | N/A | 0.10 | 4.79E+01 | 5 34E-04 | | 1.08E+194 | 2 39E-00 | N/A | N/A | 4.0E-01 |
| 108883 | | 5,34€-04 | | 4.24E-04 | 67.8 | 15 | N/A | 0.10 | 4.79E+01 | 4.32E-04 | 2015403 | 0.26E+239 | 2.33E-05 | N/A | IVA | 2.0E-01 |
| | trans-1,2-Dichlorosthylene | 4.32E-04 | 4,04E-04 | | | 1 15 | 5.16E+03 | 0.10 | 4.79E+01 | 4.83E-04 | 3,01E+03 | | 2.36€-06 | 1.22E 02 | T IE-04 | |
| | Trichioroethylene | 1,83E-04 | 4.52E-04 | 4,74E-04 | 67,6 | 13 - | 1.62E+02 | 0.10 | 4 79E+01 | 6 44E-04 | 3,015-03 | 7.47E+160 | 2.435-06 | 3.93E-04 | 8.8E-05 | |
| | VIm/I chicride | 6,44E-04 | 6.02E-04 | 5.32E-04 3.77E-03 | 57.6 | | | 0,10 | 4.79E+01 | 3.75E-03 | 30,500 | 4.33E+27 | 2.61E-06 | N/A | NVA | 1.0E-01 |
| 1330207 | | 3.75E-03 | 3.81E-03 | | 67.6 | 15 | N/A | | 4 79E+01 | | 3.01E+0.1 | | 2.59E-06 | N/A | N/A | N/A |
| | Acetophenone | 2. 0 0E-03 | 2.64E-03 | 2.61E-03 | 67.6 | 15 | NA. | 0.10 | | 2.60E-03 | | | 2,36€-06 | 4 17E-05 | N/A | 3.0E-03 |
| | Naphthalene | 4.70E-04 | 4.50E-04 | 4.64E-04 | 57,6 | 15 | 1,77E+01 | 0.10 | 4 79E+01 | 4 70E-04 | 3,01E+03 | | 2.23E-06 | N/A | N/A | 3.0E-03 |
| | Metrykraphthalerie, 2 | 3.13E-04 | Z 95E-04 | 3,08E-04 | 67.6 | 16 | N/A | 0.10 | 4.79E-01 | 3,13E-04 | 3.01E+03 | | 2.246-00 | N/A | NVA . | N/A |
| | Sipheryl, 1,1'- | 3,16€-04 | 3,01E-04 | 3.11E-04 | 67,6 | 15 | N/A | 0.10 | 4.79€+01 | 3.15E-04 | 3 0 1E+03 | PRODUCTION OF THE PRODUCTION O | | N/A | N/A | 3.DE-03 |
| | Acemphthylene | 3.38E-04 | 3.22E-04 | 3.33E-04 | 57.5 | . 15 | N/A | 0.10 | 4.79E-01 | 3.38E-04 | | 7.70E+308 | | N/A | N/A | 3.0E-03 |
| | Acomorphismo | 7,33E-04 | 7.31E-04 | 7.33E-04 | 97.6 | 16 | N/A | 0.10 | 4.79E-01 | 7.335-54 | | 835+141 | 2.45E-06 | NA | N/A | 3.0E-03 |
| | Fluorena | 6.16E-01 | 8 39E-01 | 8 22E-01 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 8,16E-01 | 3.01E+03 | | 1.04E-06 | 2 34E-05 | N/A N/A | 3.0E-03 |
| 85015 | Physionhore | 3.50E-04 | 3 41E-04 | 3.476-04 | 67,6 | 15 | 1,03E+01 | 0.10 | 4.79E+01 | 3,50E-04 | 3,012-03 | | | | | 3.0E-03 |
| | Anthracone | 1.50E-03 | 62E-03 | 1,60€-03 | 97.8 | 15 | N/A | 0.10 | 4.79E+01 | 1,605-03 | 3.01E+03 | 8 67E+64 | 2.55E-05 | N/A | N/A | |
| C9-C18 | C9-C18 Aliphatics | 3.64E-04 | 3 40E-04 | 1.57E-04 | 67,6 | 15 | N/A | 0.10 | 4.79E+01 | 3.64E-04 | 3,01E+03 | | 2.25E-09 | N/A | N/A | 2.0E-01 |
| | C11-C22 Arometics | 4 27E-04 | 4.05E-04 | 4.21E-04 | 67.6 | 15 | NA | 0,10 | 4.79E+01 | 4.27E-04 | | 4.50E+242 | | N/A | N/A | 5.0E-0Z |
| | C6-C8 Alphetics | 3.54E-04 | 3,40E-04 | 3,67E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 3.64E-04 | | 7,91E+284 | 2.28E-05 | N/A | N/A | 2.0€-01 |
| | C9-C10 Arometics | 3.69E-04 | 3 46E-04 | 3.63E-04 | 67.6 | 15 | . N/A | 0.10 | 4.79E+01 | 3,69€-04 | | 3.04E+280 | 2.29E-00 | N/A | N/A | 5 0E-02 |
| | C9-C12 Allphatics | 3 64E-04 | 3.40E-04 | 3.57E-04 | 67.6 | 16 | N/A | 0.10 | 4.79E+01 | 3,64E-04 | 3.01E+03 | 7.99E+284 | 1.26E-08 | N/A | N/A | 2.0€-01 |

Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volatiles from Groundwater
Tuture Child Recreational Scenario - RME
Huthwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Derjona Auto Parts

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

| | | Indoor exposure groundwater conc. carcinogen (µg/L) | Indoor exposure groundwater conc., noncarcinogen (µg/L) | Risk-based indoor exposure groundwater conc., (µg/L) | Pure component water solubility, S (µg/L) | Finat Indoor exposure groundwater conc., (µg/L) | | incremental risk from vapor Intrusion to indoor air, carcinogen (unitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
|---------|---|--|--|--|---|--|------|--|--|
| 71556 | 1,1,1-Trichloroethane | NA NA | NA. | NA | 1.33E+06 | N/A | ۱۱ ا | NA NA | NA |
| | Trichloro-1,2,2-triffouroethane, 1,1,2- | NA . | NA | NA | 1.70E+05 | N/A | | NA | NA NA |
| | 1,1,2-Trichloroethane | NA | NA. | NA | 4.42E+06 | N/A | | NA NA | NA |
| | 1,1-Dichloroethane | NA | NA | NA. | 5.06E+06 | N/A | | NA | NA |
| • | 1,1-Dichloroethylene | NA | NA | NA | 2.25E+06 | N/A | | NA | 1.8E-08 |
| | 1,2,4-Trichlorobenzene | NA | NA. | NA | 3.00E+05 | N/A | | NA | NA. |
| | 1,2-Dichlorobenzene | NA | NA. | NA | 2.77E+07 | N/A | | NA | NA NA |
| | Dichlorobenzene, 1,3- | NA | NA | NA | 6.88E+04 | N/A | | NA | NA |
| [| 1,4-Dichlorobenzene | NA | NA. | NA | 7.38E+04 | N/A | | NA | 1.2E-09 |
| | Butanone, 2- (MEK) | NA | NA | NA | 2.23E+08 | N/A | | NA | NA 1 |
| | Acetone | NA | NA | NA | 1.00E+09 | N/A | | NA | NA |
| | Benzene | NA | NA. | NA NA | 1.75E+06 | N/A | | 1.1E-12 | 5,4E-08 |
| | Bromomethane | NA | NA. | NA | 1.52E+07 | N/A | | NA | NA. |
| i | Carbon Disulfide | NA | NA. | NA | 2.67E+06 | N/A | | NA | NA NA |
| 108907 | Chlorobenzene | NA | NA | AN | 4.72E+05 | N/A | | NA | NA. |
| | Ethyl Chloride | NA | NA | NA | 5.32E+06 | N/A | | NA | NA |
| | Chloroform | NA | NA | NA | 7.92E+06 | N/A | | NA | NA. |
| | cis-1,2-Dichloroethylene | NA | NA | NA | 3.50E+06 | N/A | | NA | 6.6E-07 |
| | Cyclohexane | NA | NA. | NA | 5.50E+04 | N/A | 1 | NA | NA |
| | Ethylbenzene | NA NA | NA. | NA | 1.69E+05 | N/A | | NA NA | NA NA |
| | Isopropylbenzene | NA | NA | NA | 5.60E+04 | N/A | • | NA | NA |
| | Methyl cyclohexane | NA | NA | NA | 1.40E+04 | N/A | | NA | NA |
| | Methyl-Tertiary-Butyl Ether | NA | NA. | NA | 5.10E+07 | N/A | | NA | 5.6E-09 |
| | Methylene chloride | NA | NA NA | NA | 1.30E+07 | N/A | | NA | NA. |
| | Tetrachloroethylene | NA | NA. | NA. | 2.00E+05 | N/A | | 3.7E-12 | NA. |
| | Toluene | NA | NA | NA | 5.26E+05 | N/A | | NA | NA |
| | trans-1,2-Dichloroethylene | NA | NA. | NA. | 6.30E+06 | N/A | | NA | NA. |
| | Trichloroethylene | NA | NA | NA | 1.10E+06 | N/A | | 2.6E-09 | 6.8E-06 |
| | Vinyl chloride | NA | NA | NA. | 2.76E+06 | N/A | | 6.6E-12 | 8.8E-08 |
| 1330207 | · · · · · · · · · · · · · · · · · · · | NA | NA | NA | 2.20E+05 | N/A | | NA NA | NA |
| | Acetophenone | NA | NA | NA | 6.13E+06 | N/A | | NA . | NA |
| | Naphthalene | NA | NA | NA. | 3.10E+04 | N/A | | NA | 3.1E-07 |
| | Methylnaphthalene, 2- | NA | NA | NA | 2.46E+04 | N/A | | NA | NĄ |
| | Biphenyl, 1,1'- | NA | NA . | NA. | 6.94E+03 | N/A | | NA | NA NA |
| | Acenaphthylene | NA | NA | NA. | 3.93E+03 | N/A | | NA | NA . |
| | Acenaphthene | NA | NA | NA | 4.24E+03 | N/A | | NA | NA |
| | Fluorene | NA | NA | NA | 1.90E+03 | N/A | | NA | NA |
| 85018 | Phenanthrene | NA | NA | NA | 1.28E+03 | N/A | | NA | 1.7E-07 |
| 120127 | Anthracene | NA | NA. | NA | 4.34E+01 | N/A | | NA NA | NA NA |
| C9-C18 | C9-C18 Aliphatics | NA | NA | NA | 1.00E+04 | N/A | | NA | NA |
| C11-C22 | C11-C22 Aromatics | NA: | NA | NA | 5.80E+06 | N/A | | NA . | NA NA |
| C5-C8 | C5-C8 Aliphatics | NA | NA | NA | 1.10E+07 | N/A | | NA . | NA NA |
| C9-C10 | C9-C10 Aromatics | NA | NA | NA . | 5.10E+07 | N/A | | NA NA | NA |
| C9-C12 | C9-C12 Aliphatics | NA NA | NA | NA. | 7.00E+04 | N/A | 1 | NA | NA. |

95% UCL
Cancer 95% UCL
Risk HI
TOTAL: 3E-09 8E-06

= Cancer risk > 1E-05
or HQ/HI>1E+00

| Appendix G.4 | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------------|--------------------------|----------------------|----------------|-----------------------|-------------------|------------------------|--------------------------|---------------------------|----------------------------------|--------------------------|---------------------------------|-------------------------|-----------------------------|-----------------------|---------------------|-----------|---------------------|
| Johnson & Ettinger Mod Inhabition of Volatiles for Future Child Recreation | om Groundwater | uri S | | | | | | | | | | | ······ | | | | | | |
| CALCULATE RISK-RA | SED GROUNDWATER CONCENTR | ATION (man - 107) | PF hard | | | | | | | | | | | | | | | | |
| | | A HOLK HALLON, Y. IV JAE | ra. ocst) | | | | | | | | | | | | | | | | |
| | YES | | | | | | | | | | | | | | | | | | |
| C11 61 1 1 TE 1110 DELL | OR | | | | | | | | | | | | | | | | | | |
| (white "X" in "YES" box | ENTAL RISKS FROM ACTUAL GRO and Invital groundwater conc. below) | UNDWATER CONCEN | TRATION | | | | | | | | | | | | | | | | |
| | YES X | | EN7ER | ÉNTER | | | | | | | | | | | | | | | |
| | ^ | | Depth | ENTER | ENTER | ENTER | ENTER | ENTER | | | | | | | | | | | |
| ENTER | Errier Initial orour | ENTER 95% UCL | below grade | | | Average | Vadose zone | Geer-define | | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER | ENTER |
| Chemical | Communicate charge | groundwater | le bettem of enclosed | Depth below grade | 306 | ecil/ provendwater | SCS and type | vedose zon soj vego | P Vadose zone ecf dry | Vadose zone eoil lotal | Vadose zone soil water-filled | Teroet | Terpel hezard | Averaging | Averaging | | | | |
| CAS No. | | conc. | epace floor, | lo water table, | soil (VDe | lerreperal, tre, | (used to estimate | OR permeability | | perceity. | peropity. | risk for carcinogans, | quotient for noncercinogens, | time for caronogena, | time for monoarcinogena, | Exposure duration, | Exposure frequency. | Exposure | Coversion factor |
| (numbers only, | G 1 | C _w | با | LWT | directly above | T∎ | soli vapor | k | e, [∨] . | n ^v | a_v | TR | THO | AT _c | ATMC | ED | £F. | ET | QF. |
| no dashee) | Chemical | (µg/L) | (15 or 200 cm) | (cm) | wyler lable | (°C) | permeability) | Note (cm²) | (g/cm³) | (unitions) | (cm³/cm³) | (gryßeşe) | (unidea y) | (yr=) | (918) | (yr6) | (days/y) | (hrs/day) | (hrø/yr) |
| 71566 76131 Tr | 1,1,1-Trichloroethane | | 15 | 82.6 | LS | 10 | LS | 1 | 1.6 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 79005 | tchioro-1.2.2-triflouroethere, 1.1.2- 1.1.2-Trichioroethere | | 15 15 | 52.6 52.6 | LS LS | 10 | La | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 20 | 25 | 8760 |
| 75343 | 1,1-Orchioraethane | | 15 | 82.6 | LS LS | 10 | LS LS | | 1.5 | 0.43 | 0.3 | 1.0E-06 | + | 70 | 2 | 2 | 26 | 2.6 | 6760 |
| 78364 120821 | 1.1-Dichloroethylene | 1.06E-01 | 15 | 82.0 | LS | 10 | Į3 | 1 | 1.5 | 0.43 | D.3 | 1.0E-06 | + + - | 70 | 2 | | 26 26 | 2.5 | 8760 8760 |
| 95501 | 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene | | 15 15 | 52.6 82.6 | <u>\5</u> | 10 | LS | | 1,5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 541731 | Dichiorobenzene, 1.3- | | 15 | 82.6 | LS LS | 10 | LS | -i | 1,5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | 1 | 70 | 2 | | 28 | 25 | 8760 8760 |
| 106467 78933 | 1.4-Okhkrobenzene Butanone, 2- (MEK) | 4.68E-01 | 15 | 82.6 | L\$ | 10 | LS LS | 1 | 1.5 | 0.43 | 0.3 | 1.05-06 | | 70 | 2 | 2 | 20 | 25 | 8760 |
| 67641 | Acetone | | 15 | 82 6 82 6 | ĻS LS | 10 | LS LS | | 1.5 | 0 43 | 0.3 | 1.0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 71432 74839 | Benzene | 2 61E-01 | 15 | 82.6 | LS | 10 | LS | -, | 1.5 | 043 | 0.3 | 1,0E-08 1,0E-06 | 1 | 70 | 2 | | 20 | 25 | 8760 8760 |
| 76150 | Brotnomethene Carbon Digutfide | | 15 | 82.6 | LS | 10 | | | 1,5 | 0.43 | 0.3 | 1.0E-06 | <u> </u> | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 108907 | Chiorobenzene | | 16 | 82.6 82.6 | LS | 10 | LB LS | 1 | 1,5 | 0.43 | 0.3 | 1,0E-06 | · · · · ! · · · | 70 | 3 | 2 | 26 | 2.5 | 8760 |
| 76003 67663 | Ethyl Chloride | | 16 | 92.6 | LS | 10 | ĻŠ | | 1.5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | | 70 | 2 | - 2 | 26 | 2.6 | 8760 8760 |
| 156592 | Chloroform cle-1,2-Dichloroethylene | 6.79E+00 | 16 15 | 82 6 82 6 | LS LS | 10 | LS | <u> </u> | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | 2 | 2 | 28 | 2.5 | 8760 |
| 110827 | Cyclohecune | 4,745-77 | 16 | 82.6 | LS | 10 | LS 15 | 1 | 1,5 | 0.43 | 0.3 | 1,0E-06 | | | 2 | 2 | 26 | 2.6 | 8760 |
| 1004141 | Ethylbenzene | | 16 | 82.5 | ĻŞ | 10 | 1.5 | . 1 | 1.5 | 0.43 | 0.3 | 1.05-06 | | 70 | 2 2 | 2 | 26 | 25 | 8760 8750 |
| 108872 | leopropytherzene Methyl cyclohecene | | 15 16 | 82.6 | <u>1.5</u> | 10 | LS | ļ., | 1.5 | 0.43 | 03 | 1.0E-06 | 1 | 70 | 2 | 2 | 26 | 2.5 | 8750 |
| 1834044 | Metryl-Tertiary-Bubil Ether | 4.21E+00 | 15 | 82.6 | LS | 10 | L8 LS | + | 1,5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | | 70 70 | 2 | | 26 | 2.5 | 3760 3760 |
| 75092 127184 | Methylene chicride Tatrachicroshylene | 4.185-01 | 16 15 | 82.5 | LS | 10 | ĻŞ | 1 | 1.5 | 0.43 | 0.3 | 1,0E-06 | 1 | 70 | 2 | 2 | 26 | 25 | 8760 |
| 108553 | Taluene | *J95-01 | 15 | 82.6 82.6 | ĻS LS | 10 | LS LS | | 1,5 | 0.43 | 0.3 | 1,05-06 | 1 | 70 | - 2 | 2 | 26 | 2.5 | 6750 |
| 158905 | trans-1,2-Dichlorosthylene | | 15 | 628 | LS | 10 | is . | | 1,5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 | 70 | - Z | | 26 26 | 2.5 | 8750 8760 |
| 79016 75014 | Trichiggethylane Veryl chloride | 7 51E+00 2.17E-01 | 15 | 62.6 | 18 | 10 | LS | 1 | 1,5 | 0.43 | 0.3 | 1.0E-05 | i | 70 | 2 | 2 | 20 | 2.6 | 8780 |
| 1330207 | Xylones | 4,71,527 | 15 16 | 62,6 82.6 | LS LS | 10 | LS LS | 1 | 1.5 | 0.43 | 0.3 | 1,0€-06 | | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 96682 91203 | Acatophenony | | 15 | 82.6 | LS. | 10 | | + | 1,5 | 0.43 | 0.3 | 1,0E-06 1,0E-06 | | 70 | 2 3 | 2 | 26 | 2.5 | 8760 8760 |
| 91576 | Machinalene Metrenaphinalene, 2- | 1.32E+00 | 15 | 82.8 82.6 | L5 | 10 | 1.8 | | 1.5 | D.43 | 63 | 1.0E-06 | 1 1 " | 76 | 2 | 2 | 20 | 2.5 | 8760 |
| 92524 | Sipheral, L.P. | | 15 | 82.6 | 18 | 10 | L8 LS | 1 | 1,5 | 0.43 | 0.3 | 1,0E-08 | | 70 | 2 | 2 | 26 | 2.5 | 8760 |
| 208968 | Acenachinidene | | 15 | 82.6 | (3 | 10 | ĻS | -i | 1.6 | 0.43 | 0.3 | 1.0E-06 | | | 2 | | 26 | 2.5 | 8760 8760 |
| 66737 | Acensphthene Fluorene | | 15 15 | 52.6 52.6 | <u>LS</u> | 10 | 18 | | 1.5 | 5.43 | 0.3 | 1 0E-08 | 1 | 70 | 2 | ž | 26 | 2.5 | 8760 |
| 85018 | Presentivene | 2.10E+00 | 15 | 62.6 | LS | 10 | LS LS | -i | 1,5 | 0.43 | 0.3 | 1.05-01 1.05-01 | 1 1 | 70 | 2 | - 3 | 20 | 2.5 | 8760 8760 |
| 120127 C9-C18 | Anthragens C9-C18 Allehatics | | 15 | 82,0 | L8 | 10 | i.s | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | <u> </u> | . 70 | | - 4 | 26 | 2.5 | 8780 |
| C11-C22 | C11-G22 Aromatica | | 15 | \$2.6 52.5 | LS | 10 | LS LS | 1 | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 79 | . 2 | 2 | | 2.8 | 8760 |
| C6-C6 C9-C10 | C5-C8 Aliphetice | | . 15 | 82.6 | | 10 | LS | t | 1.6 | 6.43 | 6.3 | 1,0E-06 | 1 1 | 70 | | 2 | 26 | 2.5 | 8760 8760 |
| LW-C10 | C9-C10 Aromatica | | 15 | 82.6 | 15 | 10 | 19 | | 1 4 | A 45 | A | | , : - | | | | 40 | | 6100 |

Appendix C.4
Johnson & Ettinger Model - Chemical Properties Screen
Inhalation of Volatiles from Groundwater
Future Child Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

| | | | | Henry's | Henry's | Enthalpy of | | | Organic | Pure | | |
|----------|--|----------------------|----------------|-------------------|--------------|------------------|------------------|------------------|----------------------|-------------|---|----------------------|
| | | | | law constant | law constant | vaporization at | Normal | | carbon | component | Unit | l l |
| | | Diffusivity | Diffusivity | at reference | reference | the normal | boiling | Critical | partition | water | risk | Reference |
| | | in air, | in water, | temperature, | temperature, | boiling point, | point, | temperature, | coefficient, | solubility, | factor, | conc., |
| Chemical | | D _a | D _w | Н | TR | $\Delta H_{v,b}$ | T _B | Tc | Koc | S | URF | RfC |
| CAS No. | Chemical: | (cm ² /s) | (cm²/s) | (atm-m³/mol) | (°Ĉ) | (cal/mol) | (°K) | (°K) | (cm ³ /g) | (mg/L) | (μg/m ³) ⁻¹ | (mg/m ³) |
| CAS NO. | Criemical | (41178) | (011170) | (auti-iti itiloi) | (0) | (Cautifol) | (/ | 1.7 | (5,11.9) | (111972/ | (,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | |
| 74550 | 4 4 4 Triabless attacks | 7.80E-02 | 8.80E-06 | 1.72E-02 | 25 | 7,136 | 347.24 | 545.00 | 1.10E+02 | 1.33E+03 | N/A | 2.2E+00 |
| | 1,1,1-Trichloroethane | 2.88E-02 | 8.07E-06 | 5.17E-02 | 25 | 1,326 | 320.70 | 481.05 | 2.25E+02 | 1.70E+02 | N/A | 3.0E+01 |
| | Trichloro-1,2,2-triflouroethane, 1, | 7.80E-02 | 8.80E-06 | 9.12E-04 | 25 | 8,322 | 386.15 | 602.00 | 5.01E+01 | 4.42E+03 | 1.6E-05 | 2.2E+00 |
| | 1,1,2-Trichloroethane | 7.42E-02 | 1.05E-05 | 5.61E-03 | 25 | 6,895 | 330.55 | 523.00 | 3.16E+01 | 5.06E+03 | N/A | 5.0E-01 |
| | 1,1-Dichloroethane | 9.00E-02 | 1.03E-05 | 2.61E-02 | 25 | 6,247 | 304.75 | 576.05 | 5.89E+01 | 2.25E+03 | N/A | 2.0E-01 |
| | 1,1-Dichloroethylene | 3.00E-02 | 8.23E-06 | 1,42E-03 | 25 | 10,471 | 486.15 | 725.00 | 1.78E+03 | 3.00E+02 | N/A | 2.0E-01 |
| | 1,2,4-Trichlorobenzene 1,2-Dichlorobenzene | 6.88E-02 | 9.41E-06 | 1.62E-06 | 25 | 1,223 | 465.00 | 697.50 | 5.34E+01 | 2.77E+04 | N/A | N/A |
| | Dichlorobenzene, 1,3- | 4.14E-02 | 8.85E-06 | 4.70E-03 | 25 | 1,242 | 446.00 | 683.96 | 1.70E+02 | 6.88E+01 | N/A | N/A |
| | 1,4-Dichlorobenzene | 6.90E-02 | 7.90E-06 | 2.43E-03 | 25 | 9,271 | 447.21 | 684.75 | 6.17E+02 | 7.38E+01 | N/A | 8.0E-01 |
| | | 8.08E-02 | 9.80E-06 | 5.60E-05 | 25 | 1,311 | 352.50 | 528.75 | 3.83E+00 | 2.23E+05 | N/A | N/A |
| | Butanone, 2- (MEK) | | 1.14E-05 | 3,88E-05 | 25 | 6,955 | 329.20 | 508.10 | 5.75E-01 | 1.00E+06 | N/A | N/A |
| | Acetone | 1.24E-01 8.80E-02 | 9.80E-06 | 5.56E-03 | 25 | 7,342 | 353.24 | 562.16 | 5.89E+01 | 1.75E+03 | 7.8E-06 | 3.0E-02 |
| | Benzene | 7.28E-02 | 1.21E-05 | 6.22E-03 | 25 | 1,362 | 276.50 | 414.75 | 1.43E+01 | 1.52E+04 | N/A | 5.0E-03 |
| | Bromomethane | | | 1.27E-02 | 25 | 6,391 | 319.00 | 552.00 | 5.14E+01 | 2.67E+03 | N/A | 7.0E-01 |
| | Carbon Disulfide | 1.04E-01 | 1.29E-05 | | 25 | 8,410 | 404.87 | 632.40 | 2.19E+02 | 4.72E+02 | N/A | 6.0E-02 |
| | Chlorobenzene | 7.30E-02 | 8.70E-06 | 3.71E-03 | | | | 373.50 | 1.43E+01 | 5.32E+03 | N/A | 1.0E+01 |
| | Ethyl Chloride | 1.26E-01 | 6.50E-06 | 8.67E-03 | 25 | 1,355 | 249.00 334.32 | 536.40 | 3,98E+01 | 7.92E+03 | 2.3E-05 | 5.0E-02 |
| · | Chloroform | 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 6,988 | 333.65 | 544.00 | 3.55E+01 | 3.50E+03 | N/A | 2.0E-01 |
| | cis-1,2-Dichloroethylene | 7.36E-02 | 1.13E-05 | 4.07E-03 | 25 | 7,192 | 353.85 | 530.78 | 1.60E+02 | 5.50E+01 | #N/A | #N/A |
| | Cyclohexane | 8.00E-02 | 9.00E-06 | 2.00E+00 | 25 | 1,309 | 409.34 | 617.20 | 3.63E+02 | 1.69E+02 | N/A | 1.0E+00 |
| | Ethylbenzene | 7.50E-02 | 7.80E-06 | 7.88E-03 | 25 | 8,501 | | 631.01 | 9.31E+03 | 5.60E+01 | N/A | 4.0E-01 |
| | Isopropylbanzene | 6.50E-02 | 7.83E-06 | 1,47E-02 | 25 | 1,259 | 425.40 | 560.85 | 2.68E+02 | 1.40E+01 | N/A | 3.0E+00 |
| | Methyl cyclohexane | 9.86E-02 | 8.52E-06 | 4,23E-01 | 25 | 1,296 | 373.90 | | | 5,10E+04 | N/A | 3.0E+00 |
| | Methyl-Tertiary-Butyl Ether | 1.02E-01 | 1.05E-05 | 5.87E-04 | 26 | 1,324 | 328.36 | 497.11 | 3.84E+01 1.17E+01 | 1.30E+04 | 4.7E-07 | 3.0E+00 |
| | Methylene chloride | 1.01E-01 | 1.17E-05 | 2.19E-03 | 25 | 6,706 | 313.00 | 510,00 | 1.55E+02 | 2.00E+02 | 5.9E-06 | N/A |
| | Tetrachloroethylene | 7.20E-02 | 8.20E-06 | 1,84E-02 | 25 | 8,288 | 394.40 | 620.20 591.79 | 1.82E+02 | 5.26E+02 | N/A | 4.0E-01 |
| | Toluene | 8.70E-02 | 8,60E-06 | 6.63E-03 | 25 | 7,930 | 383.78 | | | | N/A | 2.0E-01 |
| | trans-1,2-Dichioroethylene | 7.07E-02 | 1,19E-05 | 9,39E-03 | 25 | 1,333 | 320.85 | 516.50 | 5.25E+01 | 6.30E+03 | | 4.0E-02 |
| | Trichloroethylene | 7,90E-02 | 9.10E-06 | 1.03E-02 | 25 | 7,505 | 360.36 | 544.20 | 1.66E+02 | 1.10E+03 | 1.1E-04 | |
| | Vlnyl chloride | 1.06E-01 | 1.23E-05 | 2.71E-02 | 25 | 5,250 | 259.25 | 432.00 | 1.86E+01 | 2,76E+03 | 8.8E-06 | 1.0E-01 1.0E-01 |
| | Xylenes | 7.69E-02 | 8.44E-06 | 6.73E-06 | 25 | 1,264 | 417.40 | 616.21 | 2.41E+02 | 2.20E+02 | N/A | |
| | Acetophenone | 6.00E-02 | 8.73E-06 | 1.02E-05 | 25 | 1,214 | 475.00 | 712.50 | 4.62E+01 | 6.13E+03 | N/A | N/A |
| | Naphthalene | 5.90 E-02 | 7.50E-06 | 4.83E-04 | 25 | 10,373 | 491.14 | 748.40 | 2.00E+03 | 3.10E+01 | N/A | 3.0E-03 |
| 1 | Methylnaphthalene, 2- | 4.84E-02 | 7.75E-06 | 1.01E-03 | 25 | 1,169 | 514.05 | 761.01 | 8.51E+03 | 2.46E+01 | N/A | 3.0E-03 |
| | Biphenyl, 1,1'- | 4.04E-02 | 8.15E-06 | 3.03E-04 | 25 | 1,149 | 529.10 | 793,65 | 6.25E+03 | 6.94E+00 | N/A | N/A |
| | Acenaphthylene | 4.43E-02 | 7.44E-06 | 2,80E-04 | 25 | 1,118 | 553.00 | 792.01 | 4.79E+03 | 3.93E+00 | N/A | 3.0E-03 |
| | Acenaphthene | 4.21E-02 | 7.69E-06 | 1.55E-04 | 25 | 12,155 | 550.54 | 803,15 | 7.08E+03 | 4.24E+00 | N/A | 3.0E-03 |
| | ' Fluorene | 3.63E-02 | 7.88E-06 | 9,41E-08 | 25 | 12,666 | 570.44 | 870.00 | 7.71E+03 | 1.90E+00 | N/A | 3.0E-03 |
| | Phenanthrene | 3.30E-02 | 7.47E-06 | 1.30E-04 | 25 | 1,057 | 613.00 | 869.01 | 1.41E+04 | 1.28E+00 | N/A | 3.0E-03 |
| | ' Anthracene | 3.24E-02 | 7.74E-06 | 6.51E-05 | 25 | 13,121 | 615.18 | 873.00 | 2.95E+04 | 4.34E-02 | N/A | 3.0E-03 |
| C9-C18 | C9-C18 Aliphatics | 6.00E-02 | 1,00E-05 | 1.66E+00 | 25 | NA | NA | NA | 6.80E+05 | 1.00E+01 | N/A | 2.0E-01 |
| C11-C22 | C11-C22 Aromatics | 6,00E-02 | 1.00E-05 | 7.32E-04 | 25 | NA | NA_ | NA NA | 5.00E+03 | 5.80E+03 | N/A | 5.0E-02 |
| C5-C8 | C5-C8 Aliphatics | 6.00E-02 | 1.00E-05 | 1.30E+00 | 25 | NA | NA_ | NA NA | 2.27E+03 | 1.10E+04 | N/A | 2.0E-01 |
| C9-C10 | C9-C10 Aromatics | 6.00E-02 | 1.00E-05 | 7.92E-03 | 25 | NA NA | NA | NA | 1.78E+03 | 5.10E+04 | N/A | 5.0E-02 |
| C9-C12 | C9-C12 Aliphatics | 6.00E-02 | 1.00E-05 | 1.56E+00 | 25 | NA NA | NA | NA NA | 1.50E+05 | 7.00E+01 | N/A | 2.0E-01 |

Appendix C.4.
Johnson & Ethinger Model - Calculations Screen
Inheliation of Volatiles from Groundweller
Future Child Recreational Scenario - CT
Southweet Proteins, Wells G&H Superfund Site, Operable Unit 2
Abertono Auto Perts

| | Saurce- building ##0#ration, L _T | Vactorse zone soil air-filled porceity, 0, | Vadose zone effective total fluid eaturation, Sp | soli intrinsio permeability, k _i | Vadose zone scal reletive bir permeability, k _m | Vedose zone soli effective vapor permeditity, k, | Thickness of Capitlery zone, | Total porpelly in capitary zone, n _{er} | Air-filed porosity in capitary zone, θ_{ext} | Water-filled porosity in capitary some, q_{uva} | Floor- wall seam perimeter, Xoreck | Biog. ventilation rate, O _{metro} | Area of enclosed enace below grade, A _e | Orack- to-loisi area ratio. | Crack death below grade, Zone | Enthalov of vaccrization at ave groundwater temperature, | Henry's law constant of two, promotivater temperature, | temperature. |
|--|--|--|--|--|--|--|------------------------------|--|---|---|--|---|---|--------------------------------------|---|---|---|-------------------|
| | (cm) | (cm²/cm²) | (cm²/cm²) | (cm²) | (cm²) | (pm²) | (cm) | (cm²/cm²) | (cm³/cm³) | (cm²/cm²) | (cm) | (cm³/s) | (cm²) | | | ۵۲۰۰۰ | H _{te} (alm-m³/mol) | H, ¹²⁸ |
| 71556 1.1.1-Trichkroethane | | | | | | | | **** | , | , | 100.01 | (4-11.0) | | (unideas) | (cm) | (cal/mel) | (alm-m-/mor) | (unitiess) |
| 76131 Trichicro-1,2,2-triflowoethere, 1,1,2- | 67.6 | 0.130 | 0.653 | 1.62E-08 | 0.390 | 5.33E-09 | 10.75 | 0.43 | 0.127 | 0.303 | 3 01E+04 | 1.81E+07 | 5.87E+07 | 5.31E-05 | 15 | | | |
| 79005 (1,1,2-Trichloroethane | 67.6 | 0.130 | 0 659 | 1,62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0,127 | 0.303 | 3 01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 7,885 1 436 | 8,50E-03 | 3.66F-01 |
| 75343 1,1-Dichloroethane | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1 81E+07 | 5.67E+07 | 5.31E-05 | 15 | | 4.55E-01 | 1.96E+01 |
| 75354 1,1-Dichloroethylene | B7.6 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 9,572 | 3.88E-04 | 1 67E-02 |
| 120821 1,2,4-Trichiorobenzene | 67,6 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75_ | 0.43 | 0.127 | 0 303 | 3.01E+04 | 1 81E+07 | 5.67E+07 | 5.31E-05 | 15 | 7,450 6,392 | 2 88E-03 | 1.24E-01 |
| 95501 1,2-Dichlorobenzene | | 0.130 | 0.659 | 1.52E-08 | 0.390 | 6.33E-09 | 18.75 | 043 | 0.127 | 0 303 | 3,01E+04 | | 5.67E+07 | 5.31E-05 | 15 | 13,230 | 1.47E-02 | 6.34E-01 |
| 541731 Dichloropenzene, 1,3- | 67.6 | 0.130 | 0.659 | 1.82E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0 303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 1 521 | 4.35E-04 | 1 87E-02 |
| 106467 1,4-Dichlorobenzene | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18 75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | | 1.41E-06 | 6.09E-05 |
| 78933 Bulanone, 2- (MEK) | 67,6 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6 33E-09 | 18 75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 1,503 | 4.11E-03 | 1 77E-01 |
| 67641 Acetone | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 11,243 | 8.89E-04 | 3 83E-02 |
| 71432 Benzene | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | | 1,486 | 4.90E-05 | 2 11E-03 |
| 74839 Bromornethane | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.51E+07 | 5.67E+07 | 5 31E-05 | 15 | 7,559 | 1.97E-05 | 8 50E-04 |
| 75150 Carbon Disutide | 57.6 | 0,130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5318-05 | 15 | 8,122 | 2.69E-03 | 1 16E-01 |
| 108907 Chlorobenzene | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6,33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5 31E-05 | 15 | 1,337 | 5 52E-03 | 2.38E-01 |
| 75003 Ethyl Chloride | 67 6 | 0 130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | | 15 | 6,682 | 6 99E-03 | 3 01E-01 |
| 67663 Chionafarm | 67.6 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5 67E+07 | 5.31E-05 | 15 | 9,603 | 1 54E-03 | 6.65E-02 |
| 156592 cis-1,2-Dichloroethylene | 67.6 | 0.130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 1,201 | 7.79E-03 | 3.35E-01 |
| 110827 Cyclohexane | 67,B | 0,130 | 0,659 | 1.62E-08 | 0.390 | 5.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 7,554 | 1.86E-03 | 6.02E-02 |
| 100414 Ethylbenzene | 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.87E+07 | 5.31E-05 | 15 | 7,734 | 2.04E-03 | 8,77E-02 |
| | 67.6 | 0.130 | D.659 | 1.62E-08 | 0,390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | | 5.31E-05 | 15 | 1,486 | 1.75E+00 | 7 54E+01 |
| 98828 (sopropy/benzene | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | | 5.67E+07 | 5.31E-05 | 15 | 10,155 | 3.18E-03 | 1.37E-01 |
| 108872 Methyl cyclohecane | 67.6 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 5.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 181E+07 | 5,67E+07 | 5.31E-05 | 15 | 1,540 | 1.26E-02 | 5.51E-01 |
| 1634044 Melhyl-Tertlery-Butyl Ether | 67.6 | 0,130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5,67E+07 | 5.31E-05 | 15 | 1,505 | 3.70E-01 | 1.59E+01 |
| 75092 Methylene chloride | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1 B1E+07 | 5.67E+07 | 5.31E-05 | 15 | 1,447 | 5 16E-04 | 2.22E-02 |
| 127184 Tetrachloroethylene | 67.6 | 0.130 | 0.559 | 1,62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | | 1 81E+07 | 5.67E+07 | 531E-05 | 15 | 7,034 | 1,17E-03 | 5.03E-02 |
| 108883 Toluene | 67,6 | 0.130 | 0.559 | 1.62E-08 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.B1E+Q7 | 5.67E+07 | 5 31E-05 | 15 | 9,553 | 7.83E-03 | 3.37E-01 |
| 156605 trans-1_2-Dichlorostinylene | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-06 | 15 | 9,154 | 2.92E-03 | 1.26E-01 |
| 790.16 Trichkrosthylene | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0 390 | 6.33E-09 | 18.75 | D.43 | 0.127 | | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 1,417 | 5.27E-03 | 3.56E-01 |
| 75014 Vinyl chicrida | 67.6 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.76 | 0.43 | 0.127 | 0.303 | 3 01E+04 | 1.B1E+07 | 5.67E+07 | 5.31E-05 | 15 | 8,657 | 4.79E-03 | 2.06E-01 |
| 1330207 Xylense | 67.6 | 0.130 | 0.659 | 1.62E-05 | 0.390 | 6 33E-09 | 18.75 | 0,43 | | | 3.01E+04 | 1.B1E+07 | 5.67E+07 | 5.31E-05 | 15 | 6,000 | 1.73E-02 | 7.46E-01 |
| 9588Z Acetophenone | 67.6 | 0 130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1,81E+07 | 5.67E+07 | 5.31E-05 | 15 | 1,542 | 5 86E-06 | 2.52E-04 |
| 91203 Naphthalone | 67.6 | 0 130 | 0.659 | 1 62E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | | 0.303 | 3.01E+04 | 1,51E+07 | | 5.31E-05 | 15 | 1,518 | 8.91E-06 | 3.83E-04 |
| 91576 Mediyinephthalama, 2- | 67.6 | 0.130 | 0.859 | 1.62E-08 | 0.390 | 8.33E-09 | 18.75 | 0.43 | 0 127 | 0,303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 12,913 | 1.52E-04 | 6.55E-03 |
| 92524 Siphenyl, 1,1'- | 67.8 | 0.130 | 0 659 | 1.62E-08 | 0.390 | 6.33E-09 | 16,75 | | 0 127 | 0.303 | 3.01E+04 | 1.81E+07 | | 5.31E-05 | 15 | 1,506 | 5.86E-04 | 3.81E-02 |
| 208968 Acenaphitylane | 67.8 | 0.130 | 0.659 | 1.62E-06 | 0.390 | 6.33E-09 | 16.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.51E+07 | | _6.31E-05 | 15 | 1,472 | 2.66E-04 | 1 14E-02 |
| 83329 Acensphthene | 87.5 | 9.130 | 0.659 | 1.52E-08 | 0.390 | 6.33E-09 | 18.75 | | 0.127 | D.303 | 3.01E+04 | 1.81E +07 | | 5.316-05 | 15 | 1,513 | 2 45E-04 | 1.05E-02 |
| 86737 Fluorene | 67.6 | 0.130 | 0.659 | 1.52E-08 | 0.390 | 6.33E-09 | 18.75 | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | | 5 31E-05 | 15 | 16,123 | 3.67E-05 | 1.58E-03 |
| 85018 Phonantiwene | 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | | | 0.43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.87E+07 | 5.31E-05 | 15 | 16,235 | 2.20E-08 | 9.48E-07 |
| 120127 Anthresens | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 6.33E-09 | 18,75 | 0.43 | 0.127 | 0,303 | 3.01E+04 | 1.81E+07 | 5.87E+07 | 5.31E-05 | 15 | 1,479 | 1.14E-04 | 4 90E-03 |
| C9-C16 C9-C18 Aliphatics | 67,6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18.75 18.75 | 0.43 | 0.127 | 6.303 | 301E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | 16,353 | 1.266-05 | 5 43E-04 |
| C11-C22 C11-C22 Aromatica | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | | 0.43 | 9.127 | 0.303 | 3 01E+04 | 1.81E+07 | 5.B7E+07 | 5.31E-05 | 15 | NA NA | 8.28E-01 | 3.56E+01 |
| C5-C8 C5-C8 Aliphetics | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | | 18.75 | 0.43 | 0,127 | 0.303 | 3 01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | NA NA | 3.60E-04 | 1 55E-02 |
| C9-C10 C9-C10 Aromatics | 67.6 | 0.130 | 0.659 | 1.62E-08 | 0.390 | 6.33E-09 | 18,75 | 0 43 | 0.127 | 0.303 | 3.01E+04 | 1.81E+07 | 5.67E+07 | 6.31E-05 | 15 | NA NA | 5 48E-01 | 2.79E+01 |
| C9-C12 C9-C12 Alphalics | 67.6 | 0.130 | 0.659 | 1.62E-08 | | 6 335-09 | 15,75 | 0 43 | 0.127 | | 3.01E+04 | 1.81E+07 | 5.67E+07 | 5.31E-05 | 15 | NA | 3 96E-03 | 1.70E-01 |
| | 47.4 | 3 | V.003 | 1.021:-00 | 0.390 | 6 33E-09 | 18.75 | 0 43 | 0.127 | 0.303 | 3.01E+04 | 161E+07 | 5.67E+07 | 5.31E-05 | 15 | NA NA | 7 50E-01 | 3.36E+01 |

Appendix C.4.
Johnson & Ellinger Model - Celculations Screen
Inheliation of Volatilae from Groundwater
Future Child Recreational Scenario - CT
Southweel Proefice, Welle G&H Superfund Stra, Open
Aberlone Auto Perla

| | Vapor viscosity el swe, soli semperature, interesture, (g/on-e) | Vadose zone effective diffusion coefficient, D ^{eff} v (cm²/s) | Copiliary zone effective diffusion confficient, D ^{ef} er (om ² (s) | Total overall effective diffusion coefficient, Deff, (cm ² /s) | Diffusion path lensth, L _s | Convection path length, L, | Source Vector conc., C (µg/m²) | Creck redius, remai | Average vepor flow rate into bldp., C(cm ³ /e) | Creck effective cliffusion coefficient, prost (ont ² /s) | Area of crack, Area (cm ²) | Exponent of aquivalent toundation Peolet number, exp(Pe ^b) | Intinite source Indoor attenuation coefficient, | infinite source bidg. cono., C _{mann} (ud/m ²) | Und risk factor, URF (µg/m³)*1 | Reference cond . RfC |
|---|---|--|---|---|--|-------------------------------------|--|---------------------------|---|---|--|---|---|--|--|----------------------------|
| | 1 | 14 | (07.1.12) | 1374) | lon | (Sit) | / | tem | (SAM 78) | (OIN /B) | yem j | (unitiess) | (unitiess) | (hthus,) | (http:// | (mg/m³) |
| 71595 1,1,1-Trichkroethene | 1.75E-04 | 4,75E-04 | 4.45E-04 | 4.66E-04 | 67.6 | 15 | N/A | 0.10 | 1 4.79E+01 | 4.75E-04 | 3.01E+03 | 1.21E+218 | 2 36F-06 | NA | N/A | 2.2E+00 |
| 75131 Trichtoro-1,2,2-triflouroethane, 1,1,2- | 1,75E-94 | 1.75E+04 | 1,63E-04 | 1.71E-D4 | 87.6 | 15 | NVA | 0.10 | 4.79E+01 | 1.75E-04 | 3.01E+03 | #NLIM | 90E-06 | NA | N/A | 3.0E+01 |
| 79005 1,1,2-Trichloroethane | 1.75E-04 | 5.24E-04 | 4,95E-04 | 5.16E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 5.24E-G4 | 3.01E+03 | | 2.38E-06 | NA | 1.8E-05 | 2.2E+00 |
| 75343 1,1-Dichloroethane | 1.75E-04 | 4.58E-04 | 4.29E-04 | 4.50E-04 | 67.6 | 15 | ΝA | D. 1D | 4.79E+01 | 4.56E-04 | 3.01E+03 | | 2.35E-06 | N/A | N/A | 5.0E-01 |
| 75354 1,1-Dichlarcethylene | 1.75E-04 | 5.47E-04 | 5.12E-04 | 5.37E-04 | 67.6 | 15 | 6.71E+01 | 0.1D | 4.79E+01 | 5.47E-04 | 3.01E+03 | | 2,39E-06 | 1.60E-04 | N/A | 2.0E-01 |
| 120821 1,2,4-Trichlorobenzene | 1,75E-04 | 2,25E-04 | 2.14E-04 | 2.22E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 2.25E-04 | 3.01E+03 | ANUM | 2.10E-06 | N/A | NA | 2.0E-01 |
| 95501 1,2-Dichlorobenzene | 1.75E-04 | 1.56E-02 | 1.60E-02 | 1.57E-02 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 1.56E-02 | 3.01E+03 | 4.41E+06 | 2.54E-06 | NA. | N/A | N/A |
| 541731 Dichlorobenzene, 1,3- | 1,75E-04 | 2.56E-04 | 2,40E-04 | 2.51E-04 | 67,6 | 15 | N/A | 0.10 | 4.79E+01 | 2.56E-04 | 3.01E+03 | WHAT | 2.16E-08 | NA | N/A | N/A |
| 106467 1,4-Dichlorobenzine | 1,75E-04 | 4.38E-04 | 4.12E-04 | 4,31E-04 | 67.6 | 15 | 1.79E+01 | 0.10 | 4.79E+01 | 4.38E-04 | 3.01E+03 | 2.05Ê+238 | 2.34E-06 | 4.19E-05 | N/A | 8.0E-01 |
| 78933 Butenone, 2- (MEX) | 1,75E-04 | 8.45E-04 | 9.27E-04 | 9,40E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 9.45E-04 | 3.01E+03 | | 2.49E-06 | N/A | N/A | N/A |
| 67641 Acetone | 1.75E-04 | 2.07E-03 | 2.085-03 | 2.07E-03 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 2.07E-03 | 3.01E+03 | 1.22E+50 | 2.57E-06 | N/A | N/A | N/A |
| 71432 Benzene | 1.75E-04 | 5.42E-04 | 5.07E-04 | 5.32E-04 | 67.6 | 15 | 3.02E+01 | 0.10 | 4.79E+01 | 5.42E-04 | 3.01E+03 | | 2.39E-06 | 7,22E-05 | 7.8E-06 | 3.0E-02 |
| 74839 Bromomethane | 1.75E-04 | 4.46E-04 | 4.18E-04 | 4.38E-04 | 67.6 | 15 | N/A | 0,10 | 4.79E+01 | 4.46E-04 | 3,01E+03 | 1.58E+232 | 2.34E-08 | N/A | N/A | 5.0E-03 |
| 75150 Carbon Disutide | 1.75E-04 | 6.34E-04 | 5.94E-04 | 6.23E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 6.34E-04 | 3.01E+03 | 1.95E+183 | 2.42E-06 | N/A | N/A | 7,0E-01 |
| 108907 Chlorobenzene | 1.75E-04 | 4.55E-04 | 4.27E-04 | 4,47E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 4.55E-04 | | 3.77E+227 | 2.35E-08 | NA | N/A | 6.0E-02 |
| 75003 Ethyl Chloride | 1.75E-04 | 7.66E-04 | 7.16E-04 | 7.51E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 7.66E-04 | 3,01E+03 | | 2.46E-06 | N/A | N/A | 1.0E+01 |
| 67663 Chloroform | 1.75E-04 | 6.43E-04 | 6.02E-04 | 6,31E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 5.43E-04 | | 1.77E+181 | 2.43E-05 | N/A | 2.3E-05 | 5.0E-02 |
| 156592 cle-1,2-Dichlorcethylene | 1.75E-04 | 4.58E-04 | 4,30E-04 | 4.50E-04 | 67.6 | | 5.95E+02 | 0.10 | 4.79E+01 | 4.59E-04 | | 7,48E+225 | 2.35E-06 | 1.40E-03 | N/A | 2.0E-01 |
| 110827 Cyclohecene | 1.75E-04 | 4.85E-04 | 4,53E-04 | 4.76E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 4.85E-04 | | 4.09E+213 | 2.36E-06 | N/A | MAVA | #N/A |
| 100414 Ethylbenzene | 1.75E-04 | 4,80E-04 | 4,31E-04 | 4.52E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 4.60E-04 | 3,01E+03 | 1.47E+225 | 2.35E-06 | N/A | N/A | 1.0E+00 |
| 95526 Isopropybenzene | 1.75E-04 | 3.95E-04 | 3.70E-04 | 3.88E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 3.95E-04 | 3.01E+03 | 1.24E+262 | 2.31E-06 | N/A | N/A | 4.0E-01 |
| 108872 Methyl cyclohexane | 1.75E-04 | 5.98E-04 | 5.59E-04 | 5.86E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 5.96E-04 | 3.01E+03 | 2.33E+173 | 2.41E-06 | N/A | N/A | 3.0E+00 |
| 1534044 Methyl-Tertiery-Butyl Ether | 1.75E-04 | 6.67E-04 | 6.26E-04 | 6.56E-04 | 67.6 | 15 | 9.35E+01 | 0.10 | 4.79E+01 | 6.57E-04 | 3.01E+03 | | 2.43E-06 | 2 28E-04 | N/A | 3.0E+00 |
| 75092 Meltrylene chloride | 1.75E-04 | 6.35E-04 | 5.96E-04 | 6.24E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 6.35E-04 | 3.01E+03 | 1.48E+183 | 2.42E-06 | N/A | 4.7E-07 | 3.0E+00 |
| 127184 Tetrachiorcethylene | 1.75E-04 | 4.39E-04 | 4,11E-04 | 4.31E-04 | 67.6 | 15 | 1,41E+02 | 0.10 | 4.79E+01 | 4.39E-04 | 3.01E+03 | 1.40E+236 | 2.34E-06 | 3,29E-04 | 5.9E-06 | N/A |
| 103383 Tokume | 1.75E-04 | 5.34E-04 | 5.00E-04 | 5.24E-04 | 57.5 | 15 | N/A | 0.10 | 4.79E+01 | 5.34E-04 | 3.01E+03 | 1.D8E+194 | 2.39E-06 | N/A | N/A | 4.0E-01 |
| 156605 trans-1,2-Dichlorosthylene | 1.75E-04 | 4.32E-04 | 4.04E-04 | 4.24E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 4.32E-04 | 3 01F+09 | 9 26E+239 | 2.33E-06 | N/A | N/A | 2,05-01 |
| 79016 Trichtorcethylene | 1.75E-04 | 4.83E-04 | 4.5ZE-04 | 4.74E-04 | 67.6 | 15 | 1.55E+03 | 0.10 | 4.79E+01 | 4.83F-04 | | 2.88E+214 | 2.36E-06 | 3.66E-03 | 1.1E-04 | 4.0E-02 |
| 75014 Vinyl chicatele | 1.76€-04 | 6.44E-04 | 6.02E-04 | 6.32E-04 | 67.6 | 15 | 1.52E+02 | 0.10 | 4.79E+01 | 6.44E-04 | | 7.47E+180 | 2.43E-06 | 3,93E-04 | 8.8E-06 | 1.0E-01 |
| 1330207 Xylenes | 1.75E-04 | 3.75E-03 | 3,81E-03 | 3.77E-03 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 3.75€-03 | 3.01E-03 | 4.33E+27 | 2.61E-05 | N/A | N/A | 1.0E-01 |
| 98862 Acelophenone | 1.75E-04 | 2.60E-03 | 2.64E-09 | 261E-03 | 67.B | 15 | N/A | 0.10 | 4.79E+01 | 2.60E-03 | 3,01E+03 | 7.28E+36 | 2.59E-06 | N/A | NA. | N/A |
| 91203 Naphthalene | 1.75E-04 | 4.70E-04 | 4.50E-04 | 4.64E-04 | 67.6 | 15 | 8 64E+00 | 0.10 | 4.79E+01 | 4.7DE-D4 | 3.01E+03 | 3.02E+220 | 2.36E-06 | 2.04E-05 | N/A | 3.0E-03 |
| 91576 Methylnaphthalene, 2- | 1.75E-04 | 3.13E-04 | 2.95E-04 | 3.08E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 3.13E-04 | 3.01E+03 | INUM | 2.23E-06 | N/A | N/A | 3.0E-03 |
| 92524 Biphenyl, 1,11- | 1.75E-04 | 3.15E-04 | 3.01E-04 | 3.11E-04 | 67.5 | 15 | NA | 0.10 | 4.79E+01 | 3.15E-04 | 3.01E+09 | #NUM | 2.24E-06 | N/A | N/A | N/A |
| 208968 Acenaphthylene | 1,75E-04 | 3,38E-04 | 3.22E-04 | 3 33E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 3.38E-04 | | 7.70E+306 | 2.28E-06 | N/A | N/A | 3.0E-03 |
| 63329 Apenephthene | 1.75E-04 | 7.33E-04 | 7.31E-04 | 7.33E-04 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 7,33E-04 | 3.01E+03 | 1.63E+141 | 2.45E-06 | N/A | N/A | 3.0E-03 |
| 66737 Fluorena | 1.75E-04 | B.16E-01 | 8.39E-01 | 8.22E-01 | 57.6 | 15 | N/A | 0.10 | 4.79E+01 | 8.16E-01 | 3.01E+03 | 1.34E+00 | 1.04E-05 | N/A | N/A | 3.0E-03 |
| 650 SS Phananthrana | 1.75E-04 | 3,50E-04 | 3,41E-04 | 3.47E-04 | 57.5 | 15 | 1.03E+01 | 0.10 | 4.79E+01 | 3.50E-04 | 3.01E+03 | 2.42E+295 | 2.27E-06 | 2.34E-05 | NA. | 3.0E-03 |
| 120127 Antivacene | 1,75E-04 | 1.60E-03 | 1.62E-03 | 1.50E-03 | 57.6 | 15 | N/A | 0.10 | 4.79E+01 | 1.60E-03 | 3.01E+03 | 8.67E+64 | 2.55E-06 | N/A | N/A | 3.0E-03 |
| C9-C18 C9-C18 Aliphatics | 1.75E-04 | 3.64E-04 | 3.40E-04 | 3.57E-04 | 67.6 | 15 | NA | 0.10 | 4.79E+01 | 3.64E-04 | 3.01E+09 | | 2.28E-06 | N/A | N/A | 2.0E-01 |
| C11-C22 C11-C22 Aromatics | 1.75E-04 | 4,27E-04 | 4.05E-04 | 4.21E-04 | 67.6 | 15 | NA | 0.10 | 4.79E+01 | 4.27E-04 | | 4.50E+242 | 2.33E-06 | N/A | N/A | 5.0E-02 |
| C5-C8 C5-C8 Aliphatics | 1.75E-04 | 3.64E-04 | 3,40E-04 | 3.57E-04 | 57.6 | 15 | N/A | 0.10 | 4.79E+01 | 3.64E-04 | | 7.91E+284 | 2.285-06 | N/A | N/A | 2.0E-01 |
| C9-C10 C9-C10 Aromatios | 1.75E-04 | 3,66E-04 | 3.46E-04 | 3.63E-04 | 57.5 | 15 | N/A | 0.10 | 4.79E+01 | 3.69E-04 | 3.01E+03 | 3.04E+280 | 2.29E-06 | N/A | NA NA | 5.0E-02 |
| C9-C12 C9-C12 Aliphatics | 1.75E-04 | 3.64E-04 | 3.40E-04 | 3.57E-D4 | 67.6 | 15 | N/A | 0.10 | 4.79E+01 | 3.64E-04 | | 7.99E+284 | 2.25E-06 | NA. | N/A | 2.0E-01 |

Appendix C.4
Johnson & Ettinger Model - Results
Inhalation of Volatiles from Groundwater
Future Child Recreational Scenario - CT
Southwest Prperties, Wells G&H Superfund Site, Operable Unit 2
Aberjona Auto Parts

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

INCREMENTAL RISK CALCULATIONS:

| | | Indoor exposure groundwater conc., carcinogen (µg/L) | Indoor exposure groundwater conc., noncarcinogen (µg/L-) | Risk-based indoor exposure groundwater conc., (ug/L) | Pure component water solubility, S (µg/L) | Final indoor exposure groundwater conc., (µg/L) | ris v intn ind- card | emental k from apor usion to cor air, cinogen uitless) | Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless) |
|------------------|---|---|---|--|--|---|---------------------------------------|--|--|
| | | | | | | | _ | | |
| | t,1,1-Trichtoroethane | NA NA | NA NA | NA. | 1.33E+06 | NA NA | i | NA | NA NA |
| | Trichloro-1,2,2-triflouroethane, 1,1,2- | NA NA | NA | NA. | 1.70E+05 4.42E+06 | NA NA | | NA | NA NA |
| | 1,1,2-Trichioroethane | NA NA | NA NA | NA. | | | · • | NA | NA |
| | 1,1-Dichloroethane | NA NA | NA NA | NA | 5.06E+06 2.25E+06 | NA NA | | NA | NA S OF OR |
| | 1,1-Dichloroethylene | NA | NA | NA NA | | NA NA | | NA | 6.0E-09 |
| | 1,2,4-Trichlorobenzene | NA NA | NA NA | NA | 3.00E+05 | | · · · · · · · · · · · · · · · · · · · | NA | NA |
| 95501 | 1,2-Dichlorobenzene | NA NA | NA | NA | 2.77E+07 | NA NA |) | NA | NA |
| 541731 | Dichlorobenzene, 1,3- | NA NA | NA | NA NA | 6.88E+04 | NA NA | | NA | NA NA |
| 106467 | 1,4-Dichlorobenzene | NA | NA NA | NA | 7.38E+04 | NA NA | | NA | 3,9E-10 |
| 78933 | Butanone, 2- (MEK) | NA NA | NA | NA | 2.23E+08 | NA NA | <u> </u> | NA | NA NA |
| 67641 | Acetone | NA NA | NA | NA | 1,00E+09 | NA NA | | NA | NA NA |
| 71432 | Benzene | NA | NA | NA . | 1.75E+06 | NA NA | · · · · · · · · · · · · · · · · · · · | 2E-13 | 1.8E-08 |
| 74839 | Bromomethane | NA NA | NA | NA | 1.52E+07 | NA NA | | NA | NA NA |
| 75150 | Carbon Disulfide | NA | NA | NA. | 2.67E+06 | NA NA | | NA | NA. |
| 108907 | Chlorobenzene | NA NA | NA | NA | 4.72E+05 | NA | L | NA . | NA. |
| 75003 | Ethyl Chloride | NA | NA | NA | 5.32E+06 | NA | | NA | NA |
| 67663 | Chloroform | NA | NA | NA | 7.92E+06 | NA NA | L | NA | NA. |
| 156592 | cis-1,2-Dichloroethylene | NA | NA . | NA | 3.50E+06 | NA NA | | NA | 5.2E-08 |
| 110827 | Cyclohexane | NA | NA | NA | 5.50E+04 | NA | | NA | NA NA |
| 100414 | Ethylbenzene | NA | NA | NA | 1.69E+05 | NA | | NA | NA |
| 98828 | Isopropylbenzene | NA | NA | NA | 5.60E+04 | NA | | NA | NA |
| 108872 | Methyl cyclohexane | NA | NA | NA. | 1.40E+04 | NA . | | NA | NA |
| 1634044 | Methyl-Tertiary-Butyl Ether | NA NA | NA. | NA | 5.10E+07 | NA | | NA | 5.6E-10 |
| | Methylene chloride | NA. | NA NA | NA | 1.30E+07 | NA | | NA | NA. |
| | Tetrachioroethylene | NA | NA | NA | 2.00E+05 | NA NA | 4. | 1E-13 | NA NA |
| | Toluene | NA | NA | NA | 5.26E+05 | NA. | | NA NA | NA NA |
| | trans-1,2-Dichloroethylene | NA | NA | NA | 6.30E+06 | NA NA | | NA | NA NA |
| | Trichloroethylene | NA | NA. | NA | 1.10E+06 | NA | 8. | 5E-11 | 6.8E-07 |
| | Vinyl chloride | NA | NA | NA. | 2.76E+06 | NA NA | 7.3 | 3E-13 | 2.9E-08 |
| | Xylenes | NA | NA NA | NA | 2.20E+05 | NA | | NA | NA NA |
| | Acetophenone | NA. | NA. | NA | 6.13E+06 | NA | | NA . | NA NA |
| | Naphthalene | NA | NA | NA | 3.10E+04 | NA NA | | NA | 5.0E-08 |
| | Methylnaphthalene, 2- | NA. | NA. | NA | 2.46E+04 | NA | | NA | NA. |
| | Biphenyl, 1,1'- | NA NA | NA NA | NA. | 6.94E+03 | NA NA | | NA | NA. |
| | Acenaphthylene | NA NA | NA NA | NA | 3.93E+03 | NA NA | | NA . | NA NA |
| | Acenaphthene | NA. | NA NA | NA. | 4.24E+03 | NA. | | NA. | NA. |
| | Fluorene | NA NA | NA NA | NA NA | 1.90E+03 | NA. | | NA . | NA NA |
| | Phenanthrene | NA NA | NA. | NA NA | 1.28E+03 | NA. | | NA . | 5.8E-08 |
| | Anthracene | NA NA | NA NA | NA NA | 4.34E+01 | NA. | | NA | NA NA |
| C9-C18 | C9-C18 Aliphatics | NA NA | NA NA | NA NA | 1.00E+04 | NA NA | | NA | NA NA |
| C11-C22 | C11-C22 Aromatics | NA NA | NA NA | NA NA | 5.80E+06 | NA NA | | NA NA | NA NA |
| C11-022 C5-C8 | C5-C8 Aliphatics | NA NA | NA NA | NA NA | 1.10E+07 | NA NA | | NA | NA NA |
| C9-C10 | C9-C10 Aromatics | NA NA | NA NA | NA NA | 5.10E+07 | NA NA | | NA NA | NA NA |
| 03-C10 | C9-C10 Arbhiatics C9-C12 Allphatics | NA NA | NA NA | NA NA | 7.00E+04 | NA NA | | NA NA | NA NA |

95% UCL
Cancer 95% UCL
Risk HI
TOTAL: 9E-11 9E-07

= Cancer risk > 1E-05 or HQ/HI>1E+00

| | <u> </u> | | | | | | | | 1 | | | | | | | | | 1 | | |
|---|---|--------------------------|-----------------------------|--------------------------------|-----------------|-----------------------------|--------------------------------|------------------|-------------------------|---------------------------|-------------------------|---------------------------------------|-------------------------|--|--------------------------|---------------------------|-----------------------|---------------------|------------------|--------------|
| Inhalstion of Volation Future Adult Resident | | nik 2 | | | | | | | | | | | | | | - | | | . - | |
| CALCULATE RISK B | ASED GROUNDWATER CONCENTR | UATION (enter "X" in "Y! | E8" bar) | | | | | | | | | | | | | | | | | |
| 1 | YES | | | | | | | | | | | | | | | | | | | |
| İ | OR | | | | | | | | | | | | | | | | | | | |
| CALCULATE INCREI | MENTAL RISKS FROM ACTUAL GRO IX and Initial groundwater conc. below) | UNDWATER CONCE | NTRATION | | - | | | | | | | | | | | | | | | |
| | YES X | | ENTER | ENTER | ENTER | ENTER | | | | | | | | | | | | | | |
| ENTER | | ENTER | Depth below grade | | Linex | | ENTER | | ENTER | | | | | | | | | | | |
| Chemical | Erner Initial group | 96% UCL | to bottom | Depth | | Average eoil/ | Various zzna 8CS | | er-delined Some zone | ENTER Vacione zone | ENTER Vadose zone | ENTER Vedose zone | ENTER Target | ENTER Target hazard | ENTER Averaging | ENTER Averaging | ENTER | ENTER | ENLES | EVLES |
| CAS No. | | groundwater conc., | of enclosed apace floor, | below prede 10 weler lable, | SCS eal type | groundwater temperature, | soli type (weed to estimate | | oil vacor moablity, | noli drv bulk demsity, | ecti total portsety. | ncii water-filled parosity, | risk for carcinogens | quotient for noncarcinogene, | time for cercinogene. | lime for noncerolinguese. | Exposure duration, | Exposure frequency. | Exposure time | Coversion |
| (numbers only, no dashee) | Chamical | کیر (بیو/ل) | اب (10 200) | LWT | directly above | T _a | soil yapor | | k, | A | h | 0. | TR | THO | AT _C | ATec | €D | EF | ET | CF |
| | | 4-4-7 | (15 or 200 pm) | (cm) | wreter teble | (°C) | permeability) | Note | (cus,) | (g/cm³) | (unitiess) | (cam ³ /cam ³) | (unitiese) | (Unitiess) | (Att) | (7(0) | (Yra) | (daye/yr) | (hre/day) | (hrulyr) |
| 71556 76131 | 1,1,1-Trichloroethane Trichloro-1,2,2-tiflouroethane, 1,1,2- | | 52.12 52.12 | 82.6 82.6 | LS | 10 | LS | | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 24 | 24 | 350 | 16 | 8760 |
| 79005 75343 | 1.1.2-Tricherostrupe | | 52,12 | 82.6 | | 10 | LS LS | | | 1,5 1,6 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 1 | 70 | 24 24 | 24 | 350 350 | 15 | 8760 8760 |
| 76364 | 1,1-Dichloroethane 1,1-Dichloroethane | 1.94E-01 | 52.12 52.12 | 82.6 | LS LS | 10 | LS LS | | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | | 24 | 24 | 350 | 16 | 8766 |
| 120821 | 1.2.4-Trichlorobenzene | | 52 12 | 82.6 | LS | 10 | LS | \ | | 1,5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 1 | 70 | 24 | .24 | 350 350 | 16 | 8760 8760 |
| 95501 541731 | 12-Dichiorobenzene Dichiorobenzene, 1,3- | | 52.12 | 62.6 | | 10 | LS | 1 | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 ' | 24 | 24 | 350 | 16 | 8760 |
| 106467 | 1.4-Dichiorobenzene | 4.84E-01 | \$2.12 52.12 | 82.6 82.6 | LS LS | 10 | <u>L\$</u> | | | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 | 70 70 | 24 | 24 | 350 350 | 16 | 8760 8760 |
| 78933 57641 | Birtanone, 2- (MES) | | 52.12 | 32.6 | LS | 10 | L3 | <u> </u> | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 24 | 24 | 350 | 16 | 8760 |
| 71432 | Acetone Benzene | 1.00E-01 | 52.12 52.12 | 82.6 | LS LS | 10 | LS LS | | | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | 1 | 70 70 | 24 | 24 24 | 350 | 16 | 8760 8760 |
| 74839 76160 | Bromomethane | | 52.12 | 82.6 | LS | 10 | LS | 1 | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 | 24 | 24 | 350 350 | 15 | 8760 |
| 108607 | Carbon Disulfide Chlorobenzene | | 52.12 52.12 | 82.6 82.6 | LS US | 10 | LS LS | | | 1,5 | 0.43 | 0.3 | 1.0E-06 1.0E-06 | | 70 | 24 24 | 24 | 350 | 16 | 8760 8760 |
| 75003 67583 | Ethyl Chloride | | 62.12 | 82.6 | LS | 10 | LS | <u> </u> | | 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 | 24 | 24 24 | 350 350 | 16 | 8760 |
| 158592 | Chloroform cls-1.2-Dichlorgethulene | 8.008+00 | 52.12 52.12 | 82.6 | LS LS | 10 | LS LS | | | 1.5 | 0.43 | 0.3 | 1.0E-08 | 1 | 70 | 24 | 24 | 350 | 16 | 6760 |
| 110827 | Cyclohexane | | 52.12 | 82.6 | ÜŚ | | Ļŝ | -i | | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-05 | 1 | 70 70 | 24 | 24 24 | 350 350 | 16 | 8760 8760 |
| 100414 | Ethilhenzene leoprorybenzene | | 52,12 | 82.6 82.6 | LS | 10 10 | L5 | | | 1.5 | 0.43 | 6.3 | 1.0E-Q6 | 1 | 70 | 24 | 24 | 350 | 18 | 8760 |
| 108872 | Methyl cyclohypane | | 52.12 62.12 | 62.6 | LS | 10 | 23 | | | 1,5 | 0.43 | 0.3 | 1.0E-08 1.0E-08 | | 7D 70 | 24 | 24 | 350 | 16 | 8760 8760 |
| 1634044 76092 | Mothyl-Tertiany-Butyl Effect Mothylene chloride | | 52.12 52.12 | 82.6 82.6 | LS | 10 | LS | _1 | | 1.5 | 0.43 | 0.3 | 1.0€-05 | 1 | 70 | 24 | 24 | 350 | 16 | 8760 |
| 127184 | Tetrachionoshyjene | 4.18E-01 | 52.12 | 82.6 | <u>LS</u> | 10 | LS US | | | 1.5 | 0.43 | 0.3 | 1.0€-06 1.0€-06 | | 70 70 | 24 | 24 | 350 350 | 15 | 8760 8760 |
| 108883 156605 | Tolume | | 52.12 | 32.5 | ĻĘ | 10 | L3 | | | 1,5 | 0,43 | 0.3 | 1,0E-06 | 1 | 70 | 24 | 24 | 350 | 18 | 8760 |
| 79016 | t ana-1.2-Dichlorostrylane Trichlorostrylane | 2.50E+01 | 52.12 52.12 | 82.6 | LS L8 | 10 | 18 | | | 1.5 | 0.43 0.43 | 0.3 | 1,0E-06 | 1 | 70 | 24 24 | 24 24 | 350 350 | 16 | 8760 8760 |
| 75014 1330207 | Vinyl chloride | 2.40E-01 | 57.12 | 82.6 | Ĺ8 | 10 | 15 | . 1 | | 1.5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 24 | 24 | 360 | 15 | 8760 |
| 98862 | X/fores Acetophenone | | 57,12 52,12 | 82.6 | LS | 10 | - LS | - 1 | | 1.5 1.5 | 0.43 | 0.3 | 1.0E-06 | | 70 70 | 24 24 | 24 24 | 350 350 | 16 | 8760 8760 |
| 91203 91676 | Naphthalana | 2.70E+00 | 52,12 | 82.6 | ĻS | 10 | L8 | | | 1.5 | 0,43 | 0.3 | 1.0E-06 | | 70 | 24 | 24 | 350 | 16 | 8780 |
| 92524 | Medinicush Gusteres, 2- Biotestral, 1,5'- | | 52.12 52.12 | 62.6 82.6 | <u> </u> | 10 | 18 | 1 | | 1.5 | 0,43 0.43 | 0.3 | 1.0E-05 | 1 | 70 70 | 24 | 24 | 350 | 16 | 8760 8760 |
| 208968 83329 | Acenephyhiene | ···· | 52,12 | 82.6 | 1.3 | 10 | LS | <u> </u> | | 1,5 | 0.43 | 6.3 | 1,0€-06 1,0€-06 | | 70 | 24 24 | 24 | 350 | 16 | 8760 |
| 86737 | Acenaphthene Flyarere | | 52.12 62.12 | 82.6 82.6 | LS | 10 | LS LS | _ | | 1,5 | 0.43 0.43 | 0.3 | 1.0E-06 | 1 1 | 70 | 24 | 24 | 350 | 16 18 | 8760 |
| 85018 | Premaritime | Z 10E+01 | 52.12 | 62.6 | L8 | 10 | LS | . i - | | 1.5 | 0.43 | 0.3 | 1.0E-06 1.0E-08 | 1 1 | 70 70 | 24 | 24 | 350 360 | -16- | 8760 8760 |
| 120127 C9-C18 | Antivacens C9-C18 Allehatics | | 52.12 52.12 | 82.6 | L8 | 10 | - 5 | 1 | | 1.5 | 0.43 0.43 | 0.3 | 1,0E-06 | 1 | 70 | 24 | 24 | 350 | 15 | 8760 |
| C11-C22 | C11-C22 Aromatics | | 62.12 | 52,6 | LS | 10 | LS LS | -} | | 1,5 | 0.43 | 0.3 | 1.0E-06 | 1 | 70 | 24 24 | 24 | 350 | 16 | 8760 8760 |
| C6-C8 C9-C10 | C6-C8 Alphetics | | 52.12 50.10 | 82.5 | - 13 | 10 | L8 | | | 1.6 | 0.43 | 0.3 | 1.0E-08 | i | 70 | 24 | 24 | 350 | 16 | 8750 |
| | | | | | | | | | | | | | | | | | | | | |

Note:

1) Default and parameters from table 7 of User's Guide for Evaluating Subsurface Vapor Introduct nine Building (U.S. EPA June 19, 2003) were used for soil water filled paramity (b.), and organic carbon fraction (f_{inc}), and total porceity (n), and soil dry bulk density (p.).